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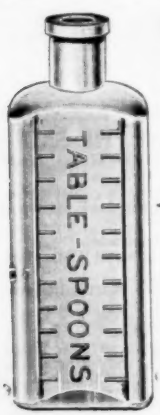

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An Address

ON THE TREATMENT OF GENITAL TUBERCULOSIS IN THE MALE.

Read in Substance at the Third Congress of the International Society of Urology Meeting in Brussels, August, 1927,

BY KENNETH M. WALKER, F.R.C.S. ENG.,

SURGEON IN CHARGE OF THE GENITO-URINARY DEPT., ROYAL NORTHERN HOSPITAL, LONDON; SURGEON TO ST. PAUL'S HOSPITAL.

THE surgical treatment of tuberculosis, if it is to be logical, must be based on a knowledge of the pathology of the disease and of the manner in which various organs are infected. Unfortunately, in the case of tuberculosis of the genital tract this knowledge is lacking. Doubt still exists as to whether the epididymis or the seminal vesicle is the first to be infected, and as to whether the spread is an ascending one from epididymis to prostate or a descending one from prostate to epididymis. Both schools of thought have their adherents, and, in spite of all the investigations carried out to settle the question, no final decision has been reached. This absence of exact pathological knowledge of the disease is reflected in the confusion that exists in our surgical treatment. Whilst some authorities confine surgical intervention to such minor proceedings as the opening of abscesses or the carrying out of an epididymectomy, others believe that as the primary lesion is in the prostate or vesicles and not in the testicle the logical line of treatment lies in removal of the vesicle in addition to the epididymis. It is impossible, therefore, to discuss the surgery of genital tuberculosis without first referring to its pathology.

ASCENDING AND DESCENDING THEORIES.

The view that genital tuberculosis is an infection which appears first in the epididymis and thence ascends to the prostate and vesicles is based mainly on three sets of observations—namely, the frequency with which tuberculous epididymitis is found without there being any clinical signs of a prostatic or vesicular lesion, the rarity of primary prostatitis or vesiculitis, and the failure on the part of such experimenters as Baumgarten and George Walker to produce in animals a descending infection. If we examine these foundations of belief we shall find that they are perhaps not so secure as they might at first sight appear. Personally, I feel that the failure on the part of clinicians to discover lesions of the prostate or vesicles in cases of tuberculous epididymitis is due to the fact that tuberculosis, when it affects these structures, gives very little evidence of its existence. At the most the patient complains of a mild frequency or irritation in micturition, and when examined per rectum nothing may be found in the early stages beyond a slight induration of the vesicles. For the same reason cases of tuberculous epididymitis or vesiculitis rarely consult a doctor until the appearance of a swelling of the testicle calls their attention to the fact that something is wrong. If, however, a very careful rectal examination be made in all cases of tuberculous epididymitis, and the smallest departure from the normal noted, whether it be in the shape of induration, tenderness, or pus in the expressed secretions, it will be found that in very few cases can the prostate or vesicles be said to be normal. In a series of 30 cases so examined by me I found only three in which the prostate and the vesicles gave no evidence of the disease, although it must be confessed that frequently there existed no proof in the remaining cases that the prostate or vesicles were necessarily tuberculous, all that could be affirmed being that they were the seat of some inflammatory process. Mr. H. H. Young, in a larger series of 222 cases of genital tuberculosis, found only 37 in which no lesions of the prostate or vesicles could be detected, but in 47 cases he found that these structures were implicated alone. Keyes goes so far as to state that in every case of tuberculous epididymitis examined by him during the last ten years he has been able to find some indications of a pathological condition of the prostate.

Post-mortem observations are unfortunately of little assistance in helping us to a decision as to the spread of genital tuberculosis, first on account of the fact that in the post-mortem room only advanced stages of the disease are seen; and second, because in the opinion of most pathologists it is impossible to deduce the direction of spread by noting the apparent age of different foci. All that the post-mortem room can teach us with any degree of certainty is that in the vast majority of cases of genital tuberculosis the whole of the genital tract is invaded.

ANIMAL EXPERIMENTS.

The third foundation of the belief that genital tuberculosis is an ascending infection is the experimental work done by Baumgarten and, later, by George Walker. These investigators found that although it was easy to obtain secondary infection of the prostate and vesicles after inoculation of the epididymis of a rabbit with an emulsion of tubercle bacilli, it was difficult or impossible to bring about a spread in the opposite direction by inoculation of the posterior urethra or walls of the bladder. In a series of 20 rabbits whose bladders were inoculated with tubercle bacilli by Walker there were only two cases in which the epididymis subsequently became tuberculous, and he puts forward the view that in these two animals the infection probably took place through the blood stream rather than along the vas.

In 1912 I repeated Baumgarten's experiment, but, before placing tubercle bacilli in the urethra, took the precaution of subjecting the right testicle to a certain amount of trauma by exposing it and squeezing it. The history of the rabbit was as follows: two days after inoculation of the urethra with tubercle bacilli a hydrocele appeared on the damaged side, the scrotum became red and œdematous, and the whole testicle felt large and tender. The maximum size was attained at the end of four days. After this there was a gradual diminution in the size of the testicle, and the hydrocele subsided. At the end of a fortnight the rabbit was seen to be suffering from an undeniable tuberculous urethritis. Small white tubercles appeared on the glans penis in the region of the meatus, and about the same time the epididymis on the side which had been damaged again became enlarged, hard, and nodular to the touch. At the end of six weeks the epididymis felt still more nodular and had increased in size. As the animal was beginning to lose flesh it was decided to kill it in order that the condition might not be complicated by the addition of generalised tubercle. At the post-mortem it was found that this undesirable complication had not been entirely averted, for five or six small tubercles were seen on the peritoneum. However, in the region of the damaged testicle massive lesions were present, and there was a marked thickening of the vas on this side. The distribution of the lesions in the vas was the same as that which is usually found in the human subjects—namely, marked thickening of the testicular and prostatic extremities with very little thickening of the intervening portion. There was also obvious disease of the vesicle on the same side, and ulceration of the urethra and neck of the bladder. I am aware that the weak point of this experiment is that there is no proof that the infection of the testicle occurred via the cord and not via the blood stream, but the massive infiltration of the epididymis commencing a few days after inoculation, and long before the rabbit had begun to lose weight, was certainly suggestive of a direct extension rather than of a late blood infection.

Baumgarten put forward the view that the reason why descending tuberculosis did not occur was that

the tubercle bacillus was a non-motile organism and consequently had no power of travelling down the cord against the current of testicular lymphatic secretions. But such an objection would apply equally to the gonococcus and to other organisms that are known to take such a path. Indeed, it is difficult to understand, in view of the close resemblance between chronic gonococcal epididymitis and tuberculosis, why a different pathology has been accorded to the two infections. Why is it that in one case the organism is supposed to reach the epididymis through the cord and in the other through the blood stream? Is it not a well-known fact that blood infections of the testicle—e.g., in syphilis, mumps, and typhoid—almost invariably affect the body of the testis rather than the epididymis? All observers now agree that it is in the lower pole of the epididymis that tuberculous deposits first appear, and this is the portion of the epididymis that would first be reached by any organisms descending the cord.

SURGICAL TREATMENT OF GENITAL TUBERCULOSIS.

The operative treatment of genital tuberculosis ranges from purely palliative measures, such as the opening of abscesses and the scraping of sinuses, to such radical procedures as complete removal of the seminal tract. Of some of the operations that have been practised in the past, such as bilateral castration, it should be unnecessary to speak, since they have been abandoned by all reputable surgeons. Nevertheless I have seen patients during the last ten years who have been treated by bilateral orchidectomy with the result that to their physical disabilities has been added a serious neurosis directly resulting from the loss of both testicles. Total removal of the testicle, even on one side, should never be carried out unless the body of the testis has been invaded to such an extent that any attempt to save it is out of the question. Fortunately, the testis shows considerable resistance to tuberculous invasion so that it is generally only in advanced cases that it becomes affected. Young states that the testis was only involved in 8·3 per cent. of his cases, although it must be admitted that Barney gives a considerably higher figure. Unnecessary sacrifice of a testis not only deprives the patient of the benefit of its internal secretion, but inflicts on him a severe psychological shock. The removal of an infected epididymis, on the other hand, is accompanied by very little psychological shock since the patient feels that the testicle is still present and can face with equanimity the subsequent discovery of disease on the opposite side should this occur. This spread of tuberculosis to the opposite epididymis is, of course, a feature of the disease, and is in my opinion a strong argument in favour of the primary focus being situated in the centrally placed structures, the prostate, or vesicles. I can find no evidence in my own statistics, or in those of others, that orchidectomy offers any greater protection to the opposite testicle than does epididymectomy, and for this reason I prefer the latter operation in all cases except where the testis itself is extensively involved.

A second point on which many surgeons differ is as to the amount of vas that should be removed with the diseased epididymis. Whereas some content themselves with removal of the vas as far as the external ring, others advise opening the inguinal canal and removing as much of the vas as can be reached by this fresh exposure. If the vas is felt to be thickened, it is, of course, a wise proceeding to remove it with the epididymis, but in the majority of cases it will be found that this thickening only extends along a few inches of its length. As a result of examining a great number of cases, both in the operating theatre and the post-mortem room, I have found that the portion of vas which is most rarely affected is its middle third. Indeed the distribution of tuberculous infiltration along the vas is a matter of considerable interest not only to the surgeon but also to the pathologist. If one dissects out the genital system of a patient who has died of tuberculosis, and examines it microscopically by means of a series of transverse sections taken through various portions of the vas, one finds the following: Sections of the prostatic extremity show that the vas itself is comparatively healthy, but that it is surrounded by a thick shell of tuberculous tissue, due to infiltration of the lymphatics. As the testis is approached this lymphatic infiltration gradually ceases. A section of the distal end of the vas, near its termination in the epididymis, shows a converse condition. Here the disease has affected the mucosa of the vas, whereas the surrounding lymphatics give little or no evidence of any lesion. This distribution suggests that the disease is disseminated from the prostate by the lymphatics, and that having encountered in the epididymis a suitable soil in which to flourish, it produces a returning wave of infection in the vas, through the agency of the secretions. It is interesting to note that the microscopic examination of the genital tuberculosis experimentally produced in the rabbit by urethral inoculation and described above showed an exactly similar distribution, the prostatic extremity of the vas and the seminal vesicle on the diseased side being enclosed in a dense shell of tuberculous infiltration, whilst the inner coat of the vas appeared healthy. Apart, therefore, from other considerations, the distribution of the tuberculous tissues suggests the existence in these cases of two opposing waves of infection, a centrifugal and primary one, travelling from the prostate along the lymphatics, and a centripetal and secondary one, in the lumen of the vas, due to the flow of infected secretions from the diseased epididymis. (See figure.) The practical lesson to be learnt from these observations is that it is seldom necessary to attempt the removal of a great length of vas when performing epididymectomy.

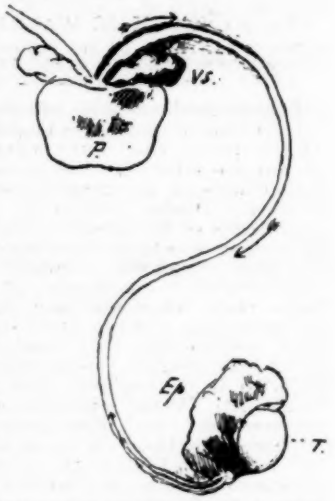

Diagram showing the spread of tuberculous infection from a deposit in the prostate. The position of the tuberculous infiltration is shown by the dark shading. At its proximal end the outer coats of the vas are mainly affected, and at its distal extremity the inner coat.

The arrows show the suggested waves of infection, a primary one from the prostate to the epididymis along the sheath of the vas, and a returning wave through the passage of infective material from the epididymis along the lumen of the vas.

Total Removal of the Seminal Tract.

It is obvious that to those surgeons who believe that the primary lesion of genital tuberculosis lies centrally in the prostate and vesicles, no operative measure can be considered truly radical unless it includes within its scope the removal of the centrally placed structures. Acting on these principles, Mr. H. H. Young, of Baltimore, has substituted for epididymectomy the operation of epididymo-vesiculectomy, or total excision of the tuberculous seminal tract. This operation, whatever its disadvantages, is in my opinion based on a true conception of the pathology of the disease. If it is necessary to attempt to remove by the knife all infected tissues then Mr. Young's formidable operation should be done. His procedure is as follows. The prostate and vesicles are first exposed through the ordinary inverted "V" shaped perineal incision, used for perineal prostatectomy. The first steps of the operation are

indeed the same as for a perineal prostatectomy, but in the later stages a fuller exposure of the seminal vesicles and the ampullæ of the vasa is required. These structures are then freed from the base of the bladder by dissection from above downwards until their junction with the upper portion of the prostate is reached. If the prostate is obviously affected it is also removed by enucleation from within its capsules, and the fascia, ampulla, seminal vesicles, and lateral lobes of the prostate taken away in one piece. The wound is then partially closed, long clamps being left attached to the upper divided ends of the vasa deferentia for traction later. The patient is then placed on his back with legs separated and epididymectomy is carried out, the vasa deferentia being exposed up to the external ring. Then with an assistant pulling on the clamp holding the divided central end of the vasa, and the operator alternating with traction of the distal end, the intermediate portion of the vas is freed from its adhesions and finally evulsed. By this means a complete and radical removal of the entire seminal tract is effected with the exception of a few mm. of the terminal portion of the ejaculatory ducts. Mr. Young furnishes statistics of 24 cases treated by his radical operation with only one operative death, in spite of the fact that many of his patients were in an advanced state of the disease and some in addition handicapped by associated lesions elsewhere in the body. He urges that the operation should be undertaken in all cases in which there is reason to believe that the vesicles or the prostate are involved in the tuberculous process, and considers that the only hope of radical cure and of completely arresting the disease lies in this direction.

The operation of total excision of the seminal tract is undoubtedly one of great severity. Not only does it mean a difficult dissection of the perineum and the removal of vesicles that are generally closely adherent to the bladder and peritoneum, but it entails a convalescence that may by no means be without incident. In two out of the three cases in which I have performed Young's operation secondary hæmorrhage has occurred from vessels lying high up in the wound, and in one case the passage of flatus through the perineal wound suggested that in spite of every effort to avoid injury to the rectum some minor damage had been inflicted. In this country perineal prostatectomy is rarely performed and for this reason, if excision of the vesicle and affected portion of the prostate is necessary in the treatment of genital tuberculosis, most operators will prefer the inguinal approach. In this operation, after completing the epididymectomy, the vas is exposed by an oblique incision above Poupart's ligament, resembling that required for subperitoneal exposure of the ureter. By stripping the peritoneum inwards and dissecting down to the pelvis, not only can the whole of the vas be exposed, but also the vesicle, and the upper half of the prostate. It is also possible to remove the opposite vesicle through this incision and thereby diminish the risk of extension of the disease to the remaining epididymis. However, although to some operators this method of exposure seems preferable, there is the undoubted disadvantage that drainage is far less satisfactory than with the perineal route.

CONSIDERATION OF SURGICAL TREATMENT.

Having indicated the possible lines of surgical intervention it will be as well to consider their place in the treatment of genital tuberculosis. Does the operation of epididymo-vesiculectomy offer good prospects of eradicating the disease, and are its results better than those obtained from less radical forms of treatment?

Before attempting to answer these questions it is important to remind ourselves that in the vast majority of cases genital tuberculosis is associated with active lesions elsewhere in the body, and particularly in the urinary tract, and for this reason it is impossible to deal with it as though it existed as an isolated entity. Genital tuberculosis must be regarded as a local manifestation of a general body condition, and this fact must never be lost sight of in any consideration of its pathology or its treatment. Cases of genito-urinary tuberculosis are now handed over to the surgeon, and it is right that this should be so, for surgery, by removing badly infected tissues, can do much to assist the body in its fight against the tuberculous invasion. But the successes of surgical intervention must not blind our eyes to the fundamental fact that the treatment of genital tuberculosis is a problem in immunity, and that rarely, if ever, can the knife completely extirpate the disease. However radical our operation, some focus must remain behind, either inside or outside the genito-urinary tract, from which new invasions may take place and fresh organs become infected. But fortunately for us, the mechanism of immunity in a patient suffering from genito-urinary tuberculosis, although impaired, is not disorganised, and the removal of the more grossly infected tissues is often sufficient to allow of its overcoming that which remains, so that the fact that it is impossible to remove all infected tissues does not mean that our operation because incomplete is useless. Every surgeon must have noted the improvement in the condition of the tuberculous prostate and vesicle that generally follows removal of the focus in the epididymis. Subsequent to epididymectomy the tuberculous deposits in the central structures become reduced in size and encapsulated with fibrous tissue. This is due both to a reduction in the amount of infection with which the body resistance is called upon to deal and also possibly to the cutting off of the flow of infecting material passing along the vas from the diseased epididymis. Even when the mode of life and environment of the patient are by no means ideal this regression of the lesions of the prostate and vesicles is generally noted, but it is, of course, much more marked if to the surgical intervention can be added general measures calculated to raise the body resistance. On *a priori* grounds, therefore, such a serious operation as that of total excision of the seminal tract is not necessarily justified. Justification must come from the results rather than from any argument based on pathology. Does the radical operation offer the patient a better chance of cure and does it reduce the danger of extension of the disease to other portions of the genito-urinary tract? Although we find on following out the subsequent history of cases of genital tuberculosis that many of them eventually die of phthisis or of general miliary tuberculosis, death in a certain number of cases is the direct result of extension of the disease to the urinary tract. Indeed it may be said that apart from generalised tuberculosis the most distressing complication that is likely to arise in the course of genital tuberculosis is involvement of the bladder and kidneys. Does total excision of the seminal tract offer a patient better protection from such a complication than does epididymectomy, supplemented by general therapeutic measures? Unfortunately, it is difficult to obtain any figures that can assist us in coming to a decision on this point. Direct extension from the prostate and vesicles to the bladder may undoubtedly occur. It is also possible that in some cases infection may spread through the lymphatic network from these structures directly to the ureter and from there up to the kidneys. But although statistics can be found showing the percentage of cases of genital tuberculosis that subsequently give evidence of urinary lesions, it is impossible to exclude from these figures cases in which the renal focus has actually existed prior to the outbreak of the genital one. It is now recognised that a tuberculous focus in a kidney may for a long time remain latent, its presence only being made manifest when it has ulcerated through into a calyx and discharged tubercle bacilli and pus cells into the urine. That the renal focus has antedated rather than post-dated the genital tuberculosis would certainly appear to have been the case in many of the so-called examples of secondary extension to the urinary tract that have been brought to my notice. This difficulty of eliminating cases of latent

renal tuberculosis introduces so large an error into the interpretation of statistics that they become of very little value as a criterion of the comparative merits of total excision of the seminal tract, and of epididymectomy, in protecting the individual from the dangers of extension of the disease to the urinary tract However, it is only fair to add that a comparison of the figures furnished by H. H. Young, with those supplied by exponents of epididymectomy would appear to indicate that the radical operation diminishes, although it does not entirely eliminate, the risk of subsequent involvement of the urinary tract.

SUMMARY.

In the foregoing paper I have laid emphasis on the fact that although the treatment of genital tuberculosis now lies in the hands of the surgeon, the disease is not an isolated unit that can be dealt with entirely by operation, but that it must be regarded as a local manifestation of a general condition requiring the adoption of all these general and local measures that we know to be of value in raising the resistance of the patient against the tuberculous invasion. In discussing the operative treatment of genital tuberculosis I am of opinion that epididymectomy is the operation which is most generally useful. Vesiculectomy, although it is based on a correct understanding of the pathology of the disease, is, I believe, rarely necessary, since removal of the lesions in the testicles is usually followed by marked regression of those in the prostate and vesicles. This regression is materially assisted if to epididymectomy are added other methods of treatment—climatic, dietetic, and the use of heliotherapy, X rays, and tuberculin. If an improvement in the central lesions does not occur, then vesiculectomy and removal of grossly infected tissue in the prostate should be carried out as a secondary measure. In advanced cases of tuberculous vesiculitis and prostatitis, and where fistulous tracts exist, the radical operation should be performed as a primary measure. Possibly it may also be carried out in a few cases of less advanced disease where the mode of life and environment of the patient is so unfavourable that from the outset he is severely handicapped in the fight against the tuberculous invasion.

STREPTOCOCCAL PITYRIASIS.[1]

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THERE is hardly any field in dermatology so ill-defined and so variously interpreted as the eruptions which we group together under the term *Pityriasis simplex*, or as, following Unna, this clinical picture is generally called, eczema seborrhœicum.

Now it is not my intention on this occasion to involve myself in the many different aspects of this complicated problem, but I hope with the present exposition to make a modest contribution towards its elucidation. My investigations add nothing new to our knowledge of genuine eczema seborrhœicum itself; they merely set out to prove that certain desquamating rashes, which have hitherto been classed as eczema seborrhœicum, should be excluded from this category and grouped together as a special and independent clinical entity.

The form of disease whose distinctive character I am concerned with I have called *Pityriasis streptogenes*, because the formation of scales is its most striking sign, and in view of the fact that streptococci are probably the cause of the disease. Earlier authors have already attempted to distinguish some of the cases comprised by this clinical expression from seborrhœal eczema. Thus in his well-known work, "Les Maladies Desquamatives," Sabouraud discusses certain desquamating eruptions which appear principally on the face in children and which often occur epidemically. They frequently develop after impetigo, for which reason Sabouraud regards them as a mild form of this disease. In England Adamson separated these desquamating affections occurring in the train of impetigo under the heading "chronic impetigo," and they are mentioned in Sequeira's "Skin Diseases" and a few other places. Most authors, however, put this clinical picture in a higher category with seborrhœal eczema.

The clinical and bacteriological investigations which I am about to relate prove, in the first place, the justification for this exclusion from seborrhœal eczema which Sabouraud, Adamson, and a few others have attempted; but they also show that the disease is far more comprehensive and far more general than one would think from the earlier observations.

METHOD OF CULTIVATING STREPTOCOCCI FROM THE SKIN.

The basis on which I propose to establish pityriasis streptogenes as an independent disease of the skin is a special method of cultivating streptococci from the skin. The method has previously been published, so that I shall content myself with stating its principle.

The method depends upon the observation that the well-known dye, crystal violet, prevents the growth of the staphylococcus in such weak concentrations as do not affect that of the streptococcus. It is therefore possible, by adding a suitable quantity of crystal violet to the various nutritive media, to get a pure culture of streptococcus when this organism is mixed with staphylococcus in the original material. As is well known, it is impossible to demonstrate the presence of streptococci by spreading material from the skin on the ordinary solid media, because a number of staphylococci are always found there, whose luxuriant colonies entirely submerge the streptococci with the ordinary technique. For detecting these bacteria in the skin Sabouraud's well-known method of cultivation in Pasteur pipettes has therefore hitherto been employed, by which they can be obtained in pure culture as facultative anaerobes from the drawn-out end of the pipette, while the staphylococci only grow in the upper layer of the broth.

Sabouraud's method has proved to be extremely sensitive when it is merely a question of the *demonstration* of the presence of streptococci; but it has an important defect in that it tells us nothing about the amount of streptococci in the material examined. As a matter of fact, a single streptococcus, perhaps present by chance, will give the same result with this culture method as when a number of them are present. In harmony with this Frédéric and Flehme have obtained a positive result from normal skin in about 15 per cent. of all cases examined, and from diseased skin a still greater number of times, so that the pipette method has a very restricted application where it is a question of demonstrating the significance of streptococci as the cause of a skin disease.

The new method, however, with the addition of crystal violet has an advantage, in that it permits of cultivation on *solid media*, whereby one can form a good idea from the quantity of colonies of the number of streptococci in the original material. The medium I have used is 10 per cent. blood-agar, to which crystal violet in a concentration of 1 : 100,000 was added. In nine out of ten cases any streptococci present will grow on this medium, while staphylococci are entirely or almost entirely inhibited, both when the culture is made from fluid material and from scales which are sprinkled over the surface of the agar. The addition of blood favours the growth of the streptococci and also ensures that the small, rather inconspicuous colonies are easily recognised, for a distinct hæmolytic zone nearly always appears around them.

ÆTIOLOGICAL SIGNIFICANCE OF STREPTOCOCCI IN SKIN DISEASE.

I shall not on this occasion enter further into the interesting results which this method has yielded in

[1] The Annual Oration delivered before St. John's Hospital Dermatological Society on June 22nd.

impetigo and various other skin diseases. These results, which I have previously reported, have completely confirmed the now generally accepted view that streptococci are the cause of impetigo vulgaris. Cultures on crystal violet agar in these cases almost constantly show myriads of streptococci both from recent and from old eruptions. On the other hand, in accord with the general view, it has turned out that impetigo contagiosa neonatorum is unlikely to be due to streptococci; for although they are very often present when cultivations are made in a pipette—which has given rise to some doubt about the ætiology—growth on crystal violet agar shows that only a few organisms are present in these cases, presenting a culture quite different in appearance from that of impetigo vulgaris. A similar result was obtained with the so-called impetigo bullosa in adults, where Jadassohn's and Lewandowsky's assumption that staphylococcus is the cause has been fully confirmed. The streptococci which can so frequently be detected by the pipette method in normal skin and in definitely non-streptococcic skin diseases are also found to be present in small numbers on cultivation on crystal violet agar, for they only produce a few colonies.

The impression of numbers given by this method thus appears to have a certain value when it is a question of deciding the ætiological significance of streptococci in any skin disease, because, as stated, the saprophytic streptococci are usually present in trifling numbers, while the pathogenic ones produce an abundant crop of colonies. It is in the light of these facts that the results I am going to communicate should be interpreted.

A Typical Case.

Before relating the cultural experiments I should like to give a short clinical description of the disease which I have defined by the term pityriasis streptogenes, and as the basis of this I will begin by citing a typical, uncomplicated case. It was a boy of 12 years, on whose face numerous isolated desquamating spots are present. They are of widely different sizes, from minute dots to the size of a coin, and the shape is irregular. The elements are pink in colour, hardly infiltrated at all, and they are only just raised above the level of the surrounding skin. The desquamation is very characteristic, the scales occurring as small streaked lamellæ, giving the surface the appearance of a ploughed field in miniature. The characters just mentioned, with which all will be familiar from daily practice, will alone be sufficient to distinguish the disease from true seborrhœal eczema, with which it is so often confused. But there are other symptoms which accentuate the difference. Thus it is a rarity to see any extensive scale formation in the scalp in these patients, while seborrhœal eczema nearly always originates and is most widely distributed in this situation. (Fig 1.)

Cultivation Experiments.

In many cases with a typical appearance such as I have described I have made cultivations on the crystal violet agar referred to, simply by scraping the surface with a sterile sharp spoon and sprinkling the scales on a Petri plate. It was found that this lesion practically always harbours streptococci, and in the majority of cases in great abundance. Thus a colony is frequently seen to spring from almost every tiny scale scattered about the plate. In cultivations on ordinary blood-agar from these eruptions one hardly ever sees the streptococci, because their growth is completely submerged by the staphylococcus colonies issuing forth from each small scale. Only by the addition of crystal violet can the true bacteriological nature of the disease be recognised.

The cultural result described is wholly different from what is obtained in cultures from psoriasis, ringworm, pityriasis rosea, and similar diseases, which morphologically have some likeness to pityriasis streptogenes. One now and then, of course, does find streptococci in these lesions, but there are never more than a few isolated colonies, just like what is obtained from the normal skin. In the drier forms of true seborrhœal eczema, also, only occasional colonies are obtained, but in the weeping forms streptococci may be present in larger numbers. In the latter instance it is undoubtedly a question of a secondary infection—of the production of impetigo so frequently seen in this disease.

The cultivation experiments therefore are greatly in favour of streptococci being the cause of the form of pityriasis described above. But from these results alone I would not venture to propose the name pityriasis

FIG. 1.

Typical case of streptococcal pityriasis with lesion starting at angle of mouth.

streptogenes for this lesion if the clinical facts did not point so definitely in the same direction. As I have already stated, Sabouraud, Adamson, and others have observed that these cases can develop from impetigo, which suggests a close ætiological relationship with this disease. One often sees, moreover, that the superficial scaly spots become the seat of impetigo, either throughout their extent or at isolated points.

Clinical Characteristics.

A point observed in many of these cases, and one which supports the view that streptococci are the cause, is their tendency to start at the angles of the mouth or the nostrils. Experience shows that these regions are haunts of streptococci, for they constitute a kind of advance station for them on their way to the skin. I will now show you one of these typical affections starting from the angle of the mouth. This clinical picture will, of course, be quite familiar to you all in your daily practice.

As I have said, the typical forms of the disease occur on the face, especially in children. But since the discovery of a method for diagnosing this complaint bacteriologically with a fair degree of certainty—namely, the cultural method described—it has been found that it also occurs in other localities in the form of a less typical eruption, and much more commonly than was previously believed. The cultural demonstration of streptococci has in a way opened our eyes to the true nature of a number of hitherto obscure desquamating eruptions, because pityriasis strepto-

genes has been borne in mind in considering these affections, and it has often been possible to detect one or more characteristics of its clinical appearance.

The affection can occur in the scalp, although somewhat rarely, where it produces spots similar to those on the face. The diagnosis can only be made clinically when spots are also present on the face,

FIG. 2.

Streptococcal pityriasis irritated by the use of cold cream.

which is commonly the case. Their ætiological affinity is then clear from their identical appearance and their similar cultural results. Sometimes the hair falls out, and there is then a surprising resemblance to ringworm, from which it can only be distinguished by the absence of the fungus and the presence of streptococci in large numbers.

The disease is common on the neck, usually commencing with an extensive eruption on the face which sends offshoots downwards. These extensions frequently exhibit one of the most characteristic features of the disease—namely, its tendency to be irritated by sunlight. The area of skin shaded by the chin is often partially or completely protected. Its relation to light, which was long ago pointed out by Rasch, has great practical importance, because many cases of so-called eczema solare, especially when it is confined to the face, are really chronic cases of pityriasis streptogenes which are irritated by the light and become eczematous every summer. Perhaps the hypersensitiveness to light is due to the fact that the formation of pigment is partly or entirely suspended in the affected parts.

The lesion is also irritated by other factors than light—thus by ordinary washing with soap, by most of the soft salves like cold cream, vaseline, and especially lanoline; further by many other remedies, notably tincture of iodine and mercury. Of internal remedies bromine, at any rate, and probably also iodine can aggravate the disease. Arsenic and quinine may also undoubtedly cause the lesion to flare up. (Fig. 2.)

The eruption on the body is seldom the primary seat of the affection. I have, however, seen several cases who in addition to the typical eruption on the face also had a number of similar spots on the body and extremities. The cultural finding—masses of streptococci—was, moreover, in conformity. When the disease occurs on the body it has, unlike seborrhœal eczema, a predilection for the lateral parts, a fact which Sabouraud has previously pointed out. (Fig. 3.)

The complaint is rather more common on the extremities, especially on the arms, where the spots, however, are less typical in appearance than on the face. When the disease is also present here, which is often the case, not only the similar cultural finding, but also the clinical resemblance, which is undeniable as soon as one thinks of the association, will display their identical nature. The arms are particularly affected in women.

On the hands the disease may greatly resemble eczematous ringworm. As these cases are usually cured by antimycotic remedies they have no doubt—*ex jurantibus*—often been regarded as mycotic, although the fungi were not found. But since it has been shown that the genuine mycotic eczemas in which the fungus can be detected do not harbour streptococci while morphologically similar cases in which the fungi cannot be found commonly do harbour them in large numbers, we must certainly assume that streptococci are the cause of at least some of the cases of ringworm-like eczema of the hands where the fungus cannot be demonstrated. Fig. 4 illustrates such a case. The resemblance to mycotic eczema is obvious; but besides the cultural result—numerous streptococci, no fungus—the laminated streaky desquamation denotes its affinity with pityriasis streptogenes. (Fig. 4.)

The cases of pityriasis streptogenes which I have described so far had developed without antecedent

FIG. 3.

Streptococcal pityriasis involving face, body, and arms.

impetigo. Those which arise after impetigo, however, exactly resemble the primary ones in appearance, course, and bacteriological findings, and they may thus be regarded as identical. Pityriasis streptogenes occurs after acute irritation of the skin as well as after impetigo—for example, following treatment for scabies—and this clinical picture has long been recognised as due to streptococci by Sabouraud and has

been termed by him "strepto-épidermite chronique." Ichthyosis is frequently complicated by pityriasis streptogenes; but the spots cannot be recognised on the previously scaly skin until they become eczematous. Further, there is much evidence in support of the view that the disease may complicate certain cases of artificial dermatitis following internal medication. Thus salvarsan and mercury dermatitis are remarkably frequently observed in patients suffering from

FIG. 4.

Streptococcal pityriasis of the hand resembling eczematous ringworm.

pityriasis streptogenes. Finally, the affection can undoubtedly complicate true seborrhœal eczema, but the conditions in this case are so complex that further investigation is needed.

Up to the present I have kept to the characteristic appearance, localisation, and bacteriological findings of the individual elements in my attempt to establish pityriasis streptogenes as an independent disease distinct from seborrhœal eczema. Although the difference between the clinical pictures of these two affections in all the points alluded to appears to me so great that in itself it warrants us in drawing the distinction, I will, nevertheless, for the sake of completeness, mention certain discrepancies concerning its occurrence and course.

While true seborrhœal eczema in its typical forms occurs principally in early childhood, at puberty, and in the two following decades, pityriasis streptogenes affects chiefly school-children of from 6–14 years of age. But many cases also occur in adults, much more commonly in women than in men. That, on the whole, it is a very common disease follows from the figures of the Polyclinic of the State Hospital in Copenhagen, where among 4700 patients in 1926 suffering from skin and venereal diseases there were 152 cases of pityriasis streptogenes. Of these 16 were men, 44 women, and 92 children. The corresponding figures for seborrhœal eczema were 72 men, 100 women, and 34 children. The relative distribution of the two diseases according to sex and age is therefore rather different also.

An interesting point which comes specially into prominence because school-children are so often affected is the undoubted infectious nature of pityriasis streptogenes. Through the courtesy of various school doctors I have had the opportunity of seeing how whole classes can be attacked almost at the same time. The fairly common eruption on the arms in women is also often found in mothers of children with extensive pityriasis streptogenes.

TREATMENT.

The treatment of the complaint is very successful. The rash frequently disappears on applying pure zinc ointment if all external irritation, especially washing with soap, is avoided; but zinc ointment containing 1 to 2 per cent. coal-tar, or 2 per 1000 antrarobin, is the most certain remedy.

The clinical picture of pityriasis streptogenes which I have attempted to describe seems to me to be so typical, taken in connexion with the bacteriological finding, as to justify its separation as a clinical entity. The reason I have proposed the name pityriasis streptogenes in place of Sabouraud's "impetigo sicca" or Adamson's "chronic impetigo" is that the disease is secondary to impetigo in a small number of cases only, while the majority—all those cases classed by most people as seborrhœal eczema—occur primarily as a pityriasis and preserve this appearance in their future course.

Whether the streptococci found in pityriasis are impetigo streptococci whose virulence is merely diminished, or whether they are a special type, future serological research must decide. But, in any case, indications are that these streptococci are the cause of the disease. Even if the relationship to impetigo proves to be very close—as, for example, exists between impetigo and echthyma—we shall have just as much right to retain pityriasis streptogenes as a third form as we have to distinguish between the two clinical forms of streptococcal infection mentioned. From a purely clinical standpoint it is still further removed from impetigo and echthyma than these two diseases are from one another.

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A METHOD FOR THE INDUCTION OF RESPIRATION IN THE NEW-BORN.

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IT is only during the past few years that we have begun to recognise that vigorous and energetic methods of treatment of an infant born in a state of suspended animation are a mistake. These methods tend to increase the degree of shock and intracranial injury which occurs after a prolonged and difficult labour. Artificial respiration as practised by Schultz and others must have helped to some extent to maintain the stillbirth rate rather than to diminish it.

We should endeavour to render the postnatal conditions as nearly similar as possible to the antenatal, at least until the infant has become acclimatised to its new surroundings. The fœtus in the uterus lies in a water bath at an even temperature, it is protected from jolts and jars, and it receives a regular amount of oxygen and nutriment by means of the cord and placenta. Birth means a severe strain on the infant in some cases, and time is required to overcome the resulting shock. The infant is suddenly thrust into surroundings where the temperature is lower than that of the uterus. That the child loses a considerable amount of heat has been already demonstrated by a series of observations which I published in 1925.[1] When shock and loss of heat are combined with the ordinary drastic methods of artificial respiration it is not surprising that the results in some cases are disastrous. Warm baths may restore animation by the application of heat but they lead to rapid radiation from the skin on exposure consequent upon removal of the natural oily protection—i.e., the vernix caseosa. The method of placing the infant imme-

[1] Proceedings of the Royal Society of Medicine, 1925, vol. xviii.

diately after birth in a warmed blanket compares most favourably with a hot bath. Subsequent cleansing of the skin for several days with olive oil instead of soap and water prevents loss of heat and loss of weight. If the infant is suffering from cardiac shock there is nothing to be gained by trying to establish pulmonary respiration until the heart has begun to function again. Respiration occurs as the result of stimulation of the medulla by the reserve of CO_2 in the blood. If this reserve is lost by energetic movements as in artificial respiration pulmonary function fails to become established unless a fresh supply is forthcoming. Shock or white asphyxia in most cases follows undue intracranial pressure during birth or from interference with the placental circulation. Forceps applied to the extended head are liable to cause injury. This has been demonstrated by the research of Miss A. Baker in this unit. She found that if the head is not sufficiently flexed and the forceps applied obliquely there is danger of intracranial injury.

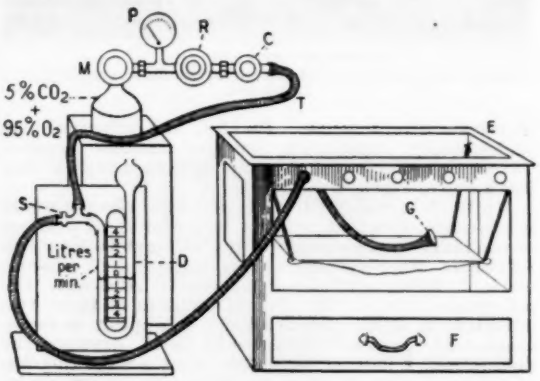
Treatment of White Asphyxia.

The most suitable treatment of an infant suffering from white asphyxia is as follows. The infant when born is wrapped in a warm towel or blanket. Its eyes are wiped and mucus is removed from the mouth and nose. When the cord is severed the child is transferred to a cot well warmed with blankets and hot-water bottles. If the air passages are still blocked by mucus a soft rubber catheter is used to suck it out. This catheter has a glass inlet and mouthpiece by means of which the mucus can be observed in the tube and its risk to the operator avoided. If the heart is only faintly beating stimulants, such as camphor ℿii., or strychnine, are given hypodermically. Gentle massage of the heart is also employed. The mask of the apparatus about to be described is applied to the infant's face, and a gas mixture of 95 per cent. oxygen and 5 per cent. carbon dioxide is given at very low pressure. The mask is applied and withdrawn at the rate of about 16 times a minute. As soon as respiration is established the mask is left on the pillow near the mouth for about one minute. The cylinder is changed and pure oxygen is given for several minutes. The administration can be carried out in a cot with a curtain or in a special wood-and-glass "breathing box." The latter is not essential but it is desirable, as it ensures a warmed and even temperature (75° F. for the new-born). As soon as the infant breathes normally it is placed in its cot. It is subsequently cleaned with olive oil and dressed. Movements involving disturbance of the brain or spinal cord should be avoided. It is well to remember that infants born while the mother is under anæsthesia must take some time to revive as they themselves are under the influence of the drug. Also instead of precipitating delivery by means of forceps for fœtal distress it has been found by experience that the administration to the mother of cardiac stimulants at intervals during labour will do much to prevent the necessity for operative interference and the consequent shock during delivery. For some years I have been carrying out a series of observations upon the new-born, more especially with regard to the treatment of shock. I have given up the practice of artificial respiration except in those cases known as "blue asphyxia," in which there is cardiac function, but difficulty is experienced in starting pulmonary function. Gentle movements of the chest will do little harm, but these infants generally react quickly to the clearing out of the air passages. Although hot baths and artificial respiration have been given up in the cases of so-called "white asphyxia," it seemed to me that there was something wanting in more or less negative treatment. As the result of considerable research upon the cause of antenatal and neonatal deaths in the unit, we came to the conclusion that a supply of CO_2 to the infant would make up for its deficiency in the blood. It would also replace the old method of artificial respiration with its harmful effects in cases of intracranial injuries. I tried various devices but could not obtain a method free from risk. Also, it was necessary to have a practical apparatus at hand for all labour cases, and one which could be worked by any member of the staff.

Prof. Yandell Henderson, of Yale, suggested that I should consult Prof. H. S. Raper, of Manchester, and I am indebted to Prof. Raper for valuable advice, and also to him and to Dr. Catherine Chisholm for showing me the method of administration of pure oxygen in the Manchester Babies' Hospital. The great difficulty in carrying out my ideas was to obtain sufficient pressure of oxygen and CO_2 without the risk of injury to the pulmonary alveoli from distension. This difficulty has been met by the construction of the respiratory apparatus I am now about to describe. I am much indebted to Messrs. Siebe, Gorman and Co., Ltd., of London, for constructing it, and for the assistance offered by Mr. Rosling, of their technical staff, and also for many suggestions as to its practical working. The apparatus is now used in the labour wards by my staff, and has proved a very valuable aid in cases in which pulmonary respiration could not be established satisfactorily.

Apparatus.

The apparatus consists of a 15 cubic feet cylinder containing a mixture of 5 per cent. carbon dioxide and 95 per cent. oxygen. It has a main valve (M) for regulating the supply of gaseous mixture. (P) is the pressure gauge indicating the quantity in the



cylinder. This communicates with a safety pressure apparatus consisting of an automatic reducing pressure valve (R) and a control valve (C) for regulating the supply. The gas passes by way of the tube (T) and the manometer (D) through a long flexible tube to a small gas mask (G). At the point where the long flexible tube leaves the manometer there is a safety valve (S). The tube passes into the breathing-box through one of the ventilation holes. The manometer, which has a water column, is a combined flow-meter, low pressure gauge, and a safety valve. It indicates the pressure of the passing gas and also, by turning off valve (C), it can be utilised for the detection of respiration. The maximum pressure of the passing gas is 8 inches of water. Above this pressure it escapes into the bulb. Under normal conditions the rate of the flow is adjusted to 2 litres per minutes. (E) is the breathing-box which insures warmth and the proper amount of oxygen and ventilation. (F) are hot-water bottles under the hammock on which the infant lies. In this way the maternal heat of the body is retained. The temperature is about 75° F.

In order to treat a baby suffering from "white asphyxia" the infant is placed in blankets in the hammock and the lid of the box left open. The gas is turned on, and by means of the control (C) and the flow-meter the rate of flow is adjusted to 2 litres per minute. The mask is applied to the infant's face about 16 times per minute, thereby exerting slight pressure in the lungs. If it is thought that respiration

is established, no matter how faint, the flow-meter may be made to register this in the following manner: the control valve (C) is shut off and the water column then becomes level. If the mask is now applied gently and firmly to the face the slightest respiratory movement will be recorded on the manometer. When respiration is established the mask is left near the mouth for one minute and the lid of the box closed. The tubing (T) is disconnected at (C) and attached to an oxygen cylinder, and oxygen alone is given for a few minutes at the rate of 2 litres per minute.

The breathing-box is also employed for the treatment of babies in the wards who are "blue" because of imperfect aeration of the lungs. The infant is given an hour's treatment at various intervals in the box and pure oxygen is supplied. The temperature of about 65° F. is maintained by hot-water bottles. The results are excellent and the mothers themselves remark on the improvement in colour when the infant is brought back to the ward. In these cases the carbon dioxide is supplied from the lungs themselves. This method is employed by Prof. Raper and Dr. Chisholm for older babies under treatment for disturbances of metabolism. We have used it in some cases of cardiac failure in infants some hours or days after birth.

In conclusion, it must be borne in mind that the administration of carbon dioxide and oxygen is not new but was employed in ancient times by mouth-to-mouth insufflation, and is still practised by some medical practitioners. The mixture is also of value in cases of cardiac and respiratory failure under anæsthesia.

NOTE ON THE TREATMENT OF JENSEN'S RAT SARCOMA BY ANTI-SERUM AND ADRENALIN.

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WHEN antisera which have a specific affinity for cancer cells are applied to normal and to tumour cells cultured in vitro the former cells are undamaged, while the latter are killed within a few minutes.[1]

This fact suggests that appropriate antisera should be ideal agents for the treatment of tumours in living animals, yet when such sera are injected into virulent growths without accessory treatment they are comparatively ineffective. This is in part due to the fact that the cytolytic effects of the sera involve a reaction between colloidal systems and as such may be expected to have a comparatively slow reaction velocity. Now it has already been shown [2] that substances injected into tumours pass very rapidly into the general circulation,* and accordingly it becomes imperative to localise the antiserum in the tumour area. This had been previously accomplished by temporary ligation of the base of the tumour,[2] or in the case of flank tumours by tying their main axillary and inguinal blood-supply.[3] These methods, scarcely applicable to the invading new growths of man, have in the present instance been substituted by the injection of adrenalin into and around the area to be treated. Not only does the adrenalin insulate the tumour and permit of localisation of the antiserum, but, as will be shown later, by arresting the blood-supply, and possibly in other ways, it has itself a curative influence.

[1] T. Lumsden: THE LANCET, 1925, i., 383.
[2] Lumsden: THE LANCET, 1925, ii., 539.
* A striking confirmation of this fact is obtained if some fluid not soluble in blood—e.g., paraffin oil or benzol—is inoculated into a tumour; within a few seconds death ensues from medullary embolism. A similar result follows the injection of 1–2 c.cm. of air into a large implanted tumour. When the injection is made into the normal subcutaneous tissues no such result ensues.
[3] Lumsden: THE LANCET, 1927, i., 116.

Methods.

Flank tumours (Jensen's rat sarcoma = J.R.S.) of 6–8 days' growth were selected for treatment; at this stage these vary from about 1 in. to 1½ in. in length. The tumour area was epilated or shaved. Black and white or brown rats were used, since in these, inoculations of the virulent strain of J.R.S. employed give 100 per cent. of tumours, of which less than 5 per cent. regress spontaneously. Albino rats of all ages are entirely unsuitable, since they vary too much in susceptibility and untreated controls may show a percentage of regressions reaching as high as 20–40. Adult rats have a much greater power of producing immune bodies than very young rats; it is therefore important that the age of the rats should be noted when interpreting the results obtained.

Adrenalin hydrochloride solution (1 in 1000) is diluted with 19 parts of normal saline, and of this dilution 1 c.cm. is injected around the margins of the tumour, beneath it, and above it. Some ten minutes later 1 to 1·5 c.cm. of anti-Jensen's-rat-sarcoma serum from a sheep (A.-J.R.S.) is injected very slowly and with little pressure into and around the tumour. This treatment is repeated daily as often as is judged necessary—i.e., until the sarcoma has ceased to enlarge and is surrounded by an inflammatory area. If too severe measures are employed the whole tumour may slough out and no immunity follow. In some instances the adrenalin was mixed directly with the serum in the proportion 1 to 20, and this was injected into different portions of the growth at frequent intervals (15 to 30 minutes) till the whole tumour was saturated. By way of control adrenalin alone diluted with either normal serum or saline solution was employed.

Experimental Results.

The results of all the experiments are shown in the following table. It is practically certain that if adult rats alone had been employed these figures would have appeared much more satisfactory.

Reagent applied.	Results.		Total treated.	Percentage of cures.
	Cured and immune.	Failed.		
Antiserum and adrenalin	29	31	60	48·3
Adrenalin alone	6	24	30	20

In the most successful of the experiments (illustrated in Figs. A, B, and C) of six rats treated with antiserum and adrenalin five were cured and immune, while of six control rats treated with adrenalin diluted with normal sheep serum only three rats were cured. In this experiment adult rats were dealt with. Where very young rats were employed the results were sometimes poor; thus in the least successful batch of five rats treated with antiserum and adrenalin only one was cured. This emphasises the observation that the production of immune bodies is essential for cure, since it is known that young rats have much less power of acquiring immunity than adults.

In 22 mice bearing a mouse cancer (M.63) of the axilla similar treatment was tried; the results were much less satisfactory. Often (in 12 mice) the tumour was entirely destroyed, leaving a large gangrenous area; this either sloughed away completely, no immunity resulting, or absorption of toxic matter from the degenerating area caused the death of the animal. In only two mice out of the 22 regression took place satisfactorily, and a test inoculation later proved these two mice immune. It appears that mice, like very young rats, have very little natural resistance and still less power of producing an acquired specific immunity.

It may be added that, confirming an observation previously reported,[3] rats which had been rendered immune to J.R.S. by cure of an existing sarcoma of the flank, were found to be immune also to the rat carcinoma R. IX. The converse does not hold; rats cured of R. IX. tumours and consequently immune thereto frequently develop sarcoma when inoculated with J.R.S. This probably depends on the titre of the

FIG. A.

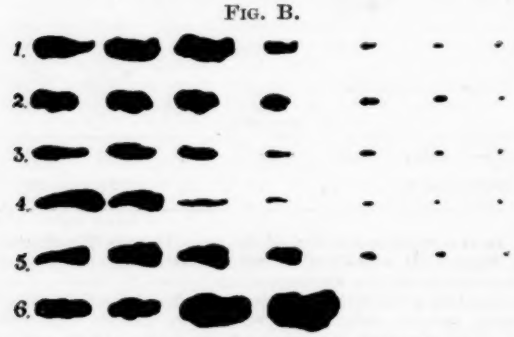
Tumours treated with adrenalin and normal sheep serum.

antimalignant bodies present, since J.R.S. is the more virulent of the two tumours.

Discussion.

The results obtained confirm the view already stated [2 3] that if by inoculation of antiserum a rat sarcoma (J.R.S.) can be made to regress an active immunity is produced in the animal, which prevents recurrence and is of long duration. While injection of antiserum may be the best means yet found of inducing immunity it is not the only method of doing so. In a series of 13 adult rats 1 c.cm. of 0·2 per cent.

FIG. B.



Tumours treated with adrenalin and anti-J.R.S. serum from a sheep.

formol was repeatedly inoculated into the tumour; in eight of these rats regression of the growth resulted and the rats were here also found to be immune when test inoculated. Similar results have followed (as shown above) treatment of J.R.S. tumours with adrenalin alone. In nine animals the adrenalin was followed after a few minutes by injection of 1–2 c.cm. of distilled water; in four of these the tumours regressed and the rats were thereafter immune. Distilled water was employed because its lethal effects when applied to cultured tumour cells resemble more or less those produced by antiserum; it was also conceived that it might help to set free antigenic factors by causing rupture of the tumour cells.

It seems, then, that the aim we must keep before us is this: To find the simplest and most effective means of so damaging a tumour locally that its cells gradually die and become antigenic, and so induce a general active immunity. It matters little if the treatment be local, so long as the result is general. It is evident that we may safely attain a much higher local concentration of any reagent in the tumour area by injecting it locally than by instilling it into the general circulation, where its effects would be exhibited in many parts of the body uselessly and perhaps harmfully.

It may be well to tabulate here one or two cautionary points referred to above or in previous papers:—

1. In comparing results, the age, breed, and colour of the rats must be carefully considered. Pure white (albino) rats (two breeds were tried) should not be used in experiments where J.R.S. is the tumour experimented with.

2. Absorption into the general circulation of the reagent injected into a tumour is very prone to occur, and must be prevented as far as possible by ligation or adrenalin if the best results are to be obtained.

3. Frequently repeated small doses slowly injected are more effective than one large dose rapidly given, but since animals appear to become rapidly acclimatised to any serum injected,[2] thorough treatment during the first 48 hours has advantages over a prolonged daily repetition of small doses. On account of acclimatisation it may also be of value to vary the antiserum administered—e.g., using for the cure of J.R.S. an anti-J.R.S. serum alternately with an anti-M. 63 serum, an anti-human cancer serum, or anti-guinea-pig sarcoma serum.

FIG. C.

Control tumours, untreated.

4. The smaller the tumour the easier it is to cure. With the very virulent strain of J.R.S. we used, tumours of over 2 in. in length (8–10 days' growth) give poor results. There is little time available since if untreated the animals survive for only a further 10–14 days, and even if treated any antibodies formed are apt to be absorbed by the enormous mass of tumour cells. Tumours under 1 in. in length (5–6 days) are very tractable except in the very youngest rats (6–8 weeks old).

We are by no means clear that our present methods are the best attainable; it is only by trying many different reagents that any conclusion on this point can be come to.

Conclusions.

1. Sarcoma (J.R.S.) of the flank in rats of various ages can be caused to regress in at least 40–50 per cent. of cases by injecting antiserum and adrenalin into and around the tumour. After such regression the rats are immune to reinoculations of this tumour and also to inoculations of the rat-cancer R. IX. Cross-immunity in the opposite direction is much less usual.

2. Adrenalin diluted with normal saline and especially adrenalin diluted with normal heterologous serum has a definitely curative effect. In 6 out of 30 animals treated with adrenalin in saline regression with subsequent immunity resulted. When untreated the tumours grew progressively in 98 per cent. of cases.

3. Of 13 sarcomatous adult rats 8 were cured and rendered immune by daily injections of 0·2 per cent. formol into and around the tumour.

4. It appears that in all cases immunity is evoked—damage to the tumour cells rendering them antigenic—and that the induction of immunity is an essential factor in completing the cure and preventing recurrence.

We are greatly indebted to Sir Charles Martin, F.R.S., for permission to carry out this work at the Lister Institute, and to Miss A. C. Kohn-Speyer, B.A., for much help, especially in keeping records of the results. One of us (T. L.) has to thank the British Empire Cancer Campaign for a whole-time grant.

ON THE COMPARATIVE LABILITY OF ANTISERA CYTOTOXIC TO CANCER CELLS.

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SOME months ago while working with DR. T. Lumsden on the effects of certain cytotoxic antisera in vitro, it was noticed that some of these were no longer active if kept for more than a month, even at 0° C., while others retained their toxicity for at least two years in the cold room.[1]

The former were also found to be inactivated, even when recomplemented, after heating at 56° C. for a few hours, while the latter retained their activity after a much longer period of heating.

The experiments described below were undertaken to extend these observations.

Methods.

The antisera tested were prepared by repeatedly inoculating fragments of tumours of various animals into animals of a heterologous species.

The following sera were chosen for investigation: (1) Anti-human-cancer serum made from a sheep. (2) Anti-Jensen's-rat-sarcoma serum made from a sheep. (3) Anti-mouse-carcinoma serum (M.63 of the Imperial Cancer Research Fund) made from a rabbit.

The freshly prepared sera were run into short capillary tubes and heated in a water-bath at 56° C. Tubes were taken out singly and tested at hourly or half-hourly intervals. Similar samples were kept at 0° C. and tested every two or three days.

Since the cytolytic effects of antisera only take place in the presence of complement, an equal part of fresh rat serum was added to all heated antisera.

The sera were tested on cancer cells actively migrating out of tissue cultures of mouse cancer (M.63) and Jensen's rat sarcoma (J.R.S.) grown in pure rat serum. Two cultures in separate drops of serum were grown on each coverslip; to one of these cultures antiserum was applied, the other was fed with normal serum as a control.

Rapid death of the actively migrating cells was taken as the index of toxicity of the antiserum.

Experimental Observations.

In all over 200 cultures were tested. The results obtained with the three antisera dealt with are set out in the following table:—

Anti-human cancer.		Anti-Jensen's rat sarcoma.		Anti-mouse cancer (M.63).	
Serum applied.	Cytolysis of M.63 cells.	Serum applied.	Cytolysis of M.63 cells.	Serum applied.	Cytolysis of M.63 cells.
	After—		After—		After—
Sample 1	5 hrs.	Sample 1	21½ hrs.	Sample 1	24 hrs.†
,, 2	6½ ,,	,, 2	20 ,,	,, 2	24 ,, †
,, 3	5 ,,	,, 3*	26 ,,	,, 3	49 ,, †
,, 4	5 ,,	,, 4	23½ ,,	,, 4	69 ,, †

* At 53° C. † Not tested later.

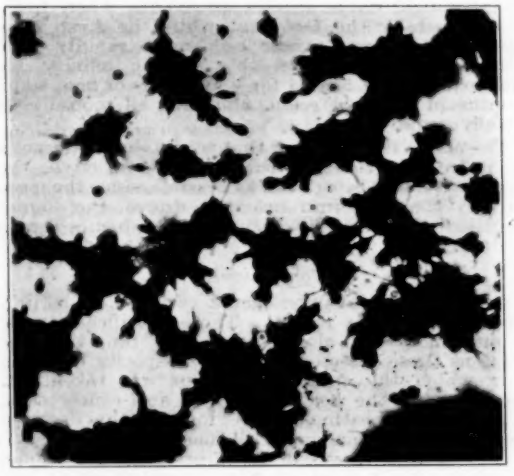
This table shows the longest period of heating at 56° C., which did not completely inactivate the particular antiserum tested; if the sera were heated beyond these periods no cytolysis occurred. The values for Anti-M.63 rabbit serum do not show an end-point, since no samples were tested after heating for more than 69 hours, at which period the antiserum was still effective. The results may be summarised as follows:—

Anti-Human Cancer Serum.—Heating for 6–7 hours at 56° C. completely destroys its cytolytic action on M.63, even in the presence of fresh complement. After 28 days at 0° C., or about six days at laboratory temperature (18° C.) the cytolytic action has similarly disappeared.

Anti-Jensen's Rat Sarcoma Serum.—This, when recomplemented, no longer retains its cytolytic action on M.63 cells after 21–24 hours at 56° C.

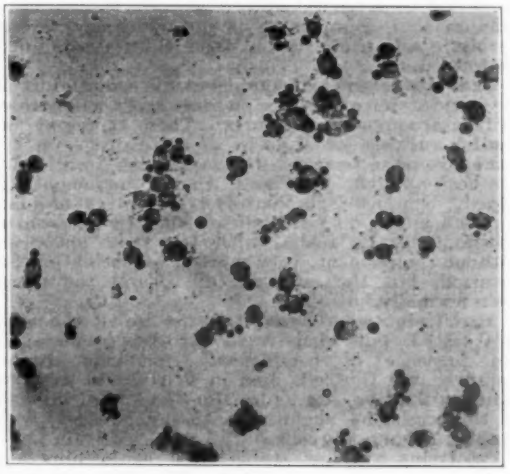
Anti-Mouse-Cancer (M.63) Serum.—This still kills M.63 cells by rapid cytolysis, when recomplemented, after 69 hours at 56° C. Keeping for over two years at 0° C. does not destroy its cytolytic effect on M.63 cells if complement is added.

FIG. 1.



Culture of mouse cancer (M.63) to which heated anti-mouse cancer serum had been applied without the addition of complement. The cancer cells are very markedly clumped, but are not dead, and are beginning to migrate out again. (Iron hæmatoxylin and Sudan.)

FIG. 2.



Control culture of M.63 in separate drop on the same coverslip, stained coincidently with Fig. 1, showing the effect of heated anti-mouse cancer serum plus complement. Complete chromatolysis has occurred, the nuclei do not stain with hæmatoxylin, and death has occurred too rapidly for agglutination to take place.

[1] T. Lumsden: THE LANCET, 1926, ii., 112.

Discussion.

Although the results reported are sufficiently definite to demonstrate a marked difference of lability between the various antisera examined, the actual periods given in hours above must not be considered as absolutely fixed, since the following variable points must be taken into consideration: (1) The activity of the culture—age, vigour, number of migrating cells, &c. (2) The strength of the antiserum; this varies with the animal inoculated, the site and the number of injections, the length of time after the last injection, the length of time the serum is kept before heating. (3) The strength of the complement; this depends on the animal used, its freshness, and the actual dilution employed.

These factors were all considered in the above experiments and kept as constant as possible.

The complement question presented considerable difficulties. Guinea-pig serum could not be used as it is frequently toxic to mouse and rat tissues. Mouse serum was also discarded as it was found to be weaker and far more variable than rat serum in the amount of complement it contained. In order to give as little variation in the complement as possible, an equal part of fresh rat serum was always added to the antiserum in the above experiments, and the control culture was re-fed with the same rat serum alone.

It was noticed that addition of fresh complement was not needed even with heated antisera, if these were applied to cultures only 24 hours old, and which had been propagated in fresh rat serum, indicating that complement is still active after 24 hours in the incubator at 37° C. This observation is noteworthy, since if it were not taken into account, the erroneous opinion that complement is not necessary for the cytolytic action of sera on tissue culture cells might be formed.

That the presence of complement is essential to the cytolytic action of antisera on cancer cells is illustrated by the accompanying figures. These represent two similar cultures of M.63 in separate drops on the same coverslip, to which the same heated antiserum has been applied. In Fig. 2, where complement was added, complete chromatolysis has taken place and the nuclei do not stain at all. In the control culture, Fig. 1, treated with the same antiserum without complement, very marked agglutination has occurred, but the cells are alive, and the nuclei stain normally.

Agglutinins were found to exist in all the antisera tested, but when rapid cytolysis occurred in the presence of complement, migration ceased instantly and the cells died in situ almost as if an ordinary fixative—e.g., formalin—had been applied. In this case the agglutinins, though present, were unable to clump the cells.

Cytolysins are less stable than agglutinins and are more variable in lability. Thus the cytolysin of anti-human-breast-cancer serum is about four times as heat labile when tested on M.63 cells as the cytolysins of anti-Jensen's-rat-sarcoma serum, both sera being obtained from sheep.

The simplest explanation of this difference in lability is that an anti-cancer serum contains two cytolytic factors: (*a*) One that is specifically antimalignant, although not specific to any particular tumour. This factor is labile. (*b*) One that is antagonistice to the group of animals from which the antigenic tumour was taken. This factor is relatively stable.

It is by antibodies of type (*a*) = antimalignant, that antihuman breast cancer serum kills M.63, and by antibodies of type (*b*) = antispecies, that heated anti-M.63 serum acts on M.63, while fresh anti-M.63 serum is lethal to M.63 by virtue of containing both factors.

The following points observed during this investigation confirm this view. In an antiserum tested on M.63, wherever mouse-rat-group antibodies are present stable cytolysins are also present, and, on the other hand, only labile cytolysins are present when anti-mouse-rat-bodies are absent. Thus any antiserum made by using a rat or mouse tumour as an antigen contains a stable element toxic to M.63. Any antiserum made from any tumour of another species—e.g., guinea-pig or man—kills M.63 by means of antibodies which are comparatively labile. The existence of an antibody to M.63 in a "hyperimmune" J.R.S. rat [2] is perhaps the best proof of the existence of a separate antimalignant factor. This serum is purely antimalignant, it has no effect whatever on normal mouse tissues, and its cytolysin is more labile than that of any other antiserum tested. Similarly, in anti-human-cancer serum (no anti-rat-mouse group bodies being present), antimalignant bodies alone act on the M.63 cells, and the effect is absolutely specific to cancer cells. If this antiserum is applied to a culture of mouse cancer, heart and kidney, the cancer cells are picked out and killed rapidly, while the heart and kidney cells are left quite undamaged.

As might be expected, the antispecies bodies are most stable against tumours of the particular species from which the antigen was derived, but they are stable, although to a less degree, against the tumours of closely-related species—e.g., mouse or rat. Thus anti-J.R.S. bodies are more stable on J.R.S. than on M.63 and vice versa. In an experiment to demonstrate this, it was found that while anti-M.63 serum still killed M.63 after 49 hours, it no longer killed J.R.S. after 42 hours, and on the other hand, while anti-J.R.S. serum still killed J.R.S. after 27 hours or more, it no longer killed M.63 after 24 hours.

A confirmation that anti-M.63 serum is toxic to M.63 both through labile antimalignant antibodies and through stable species antibodies when fresh, is supplied by the fact that while the fresh antiserum kills mouse cancer cells more rapidly than normal tissues, it loses this specific affinity for malignant cells if heated for some hours or kept some months in the cold room, and kills all mouse cells equally rapidly.

The above facts suggest that to get the best results when treating tumours with antisera in vivo, the sera used should be as fresh as possible, since the more recently the antiserum has been drawn, the higher the titre of specifically antimalignant bodies it will contain.

Conclusions.

1. The cytolysins investigated vary in heat lability according to their nature. Those specifically toxic to malignant cells alone are at least four times as labile as those directed against the species or group from which the antigenic tumour was taken. 2. From testing the heat lability of anti-cancer sera, it appears that heating at 56° C. for 6–7 hours destroys the specific antimalignant element, while the antispecies element may still be effective after 69 hours or more. 3. If kept at 0° C. complement is not effective after about three weeks, the antimalignant element after four weeks, while the antispecies element is still active after two years or more.

In conclusion, I should like to thank Dr. T. Lumsden for his help and criticism during the progress of this investigation, and the British Empire Cancer Campaign for their grant to me.

[2] T. Lumsden: THE LANCET, 1927, i., 116.

PLYMOUTH VOLUNTARY HOSPITALS COMMITTEE.—The committee report a steady increase during 1926 in the "1*d.* in £" contributory scheme membership. In the last two years there has been an increase of over £8000 and the total sum now obtained by this means is £15,211. The scheme is being considerably developed in country districts. A severe set back to the hospital service has been the partial closing of the Pearn Convalescent Home, which has through lack of funds been compelled to curtail its usefulness. The Rest Home has been closed entirely and the number of available beds in the home reduced by nearly one-half.

Clinical and Laboratory Notes.

A NOTE ON THE PREVENTIVE TREATMENT OF SYPHILIS.

BY H. D. LIVINGSTONE SPENCE, M.D., M.CH. Q.U. ONT.

TWENTY years ago great interest was aroused by Metchnikoff's statement in the course of his Harben lectures that the inunction of a mercurial ointment, as first proposed by Behrman of Nürnberg, prevented subsequent clinical manifestations of lues if performed at the site of inoculation within 18 hours. Except for one human subject his investigations had been conducted with anthropoids, chimpanzees being the only animals then readily inoculable with syphilis, and their availability determining the number of his experiments. Experience has since confirmed the reliability of mercurial ointment if correctly applied within an hour of accidental exposure during operative work, but its use as long as 18 hours after the event must be regarded as of very speculative utility.

Rubbing mercurial ointment into an accidentally infected finger is, however, on quite a different footing from the application of the same substance at the site or sites of possible contamination during coitus. A prolonged inunction into the glans penis is rightly regarded as an almost intolerable procedure, and even where properly performed no absolute protection results, since primaries may still develop upon untreated parts of the genitalia or farther afield through bites or lascivious kissing. The method, too, is inapplicable to females. Duly impressive statistics have been published purporting to show the effectiveness of the "Dreadnought" ointment in preventing lues, but the writer's observations in war camps accommodating upwards of 40,000 men, where records were methodically kept, were intensely disappointing. It seemed that the man who used the stuff fared no better and no worse than the unbeliever who just relied upon plenty of honest soap and water, coupled perhaps with the ancient custom of washing the parts in voided urine.

Let us now consider the case of the person who presents himself a day or two after exposure, when prophylaxis can only mean arsenical medication. Given acceptable evidence of actual contact no justification exists for delaying treatment until the corroborative appearance of a primary sore dismisses any possibility of administering a coup de grâce; for, if a true analogy obtains between human and rabbit infections, the disease is already systemic when the chancre appears. In a little more than two years I have given anticipatory treatment to 11 private patients, being satisfied that they had in fact been exposed. Insistence upon valid evidence of such exposure not merely rules out the large class of psychopaths and syphilophobes, but provides good ground in law for any action taken—a point of obvious importance. The following brief notes sufficiently illustrate the sort of history these individuals furnish and the practical certainty of contamination.

May, 1925: A male patient with a small sore containing spirochætes admitted connexion with his consort upon returning from abroad two days previously, the character of the lesion being then unsuspected. The woman accepted preventive treatment.

September, 1925: A male patient upon the day following exposure learned that a friend had acquired syphilis from the same woman a fortnight before. A prophylactic injection was given after the friend had been located and the diagnosis confirmed.

July, 1926: A male patient upon exposure noticed disquieting symptoms in his partner, including an early rash, and without disclosing his fears persuaded her to accompany him for advice concerning a "chill." Upon representations she accepted routine treatment, the man receiving a prophylactic injection.

In each instance a careful history is accompanied by a complete physical examination, including the usual tests of the renal function, the circulatory apparatus, eyes, and reflexes. A sample of blood is then obtained for a Wassermann test, and finally 0·6 g. novarsenobenzol is administered intravenously. The Wassermann test is again performed at the end of the sixth and tenth weeks. No lesion has appeared in any of these patients, and serum tests have been uniformly negative, suggesting that novarsenobenzol used alone and in this moderate dosage is protective when given within a day or two after exposure.

London.

TWO CASES OF FUNCTIONAL PARALYSIS OF THE LEGS FOLLOWING LABOUR.

BY M. SALMOND, M.D., B.S. LOND.,
THIRD ASSISTANT, OBSTETRICAL AND GYNÆCOLOGICAL UNIT, ROYAL FREE HOSPITAL, LONDON.

THE two following cases are worth recording because functional paralysis is an uncommon complication after labour. They both occurred during the last six months in the practice of the Obstetrical Unit of the Royal Free Hospital.

CASE 1.—A 1-para, aged 24, had a spontaneous normal delivery of her second child. Her condition was satisfactory until the tenth day when she got up. She was then unable to use her legs or stand and there was weakness of the right arm and hand. On examination the cranial nerves and fundi were normal. The abdominal reflexes were present, the knee-jerks increased, and the plantar responses normal. Sensation was unimpaired. There was loss of power in the right arm and hand and in both legs. The patient was not of a nervous or emotional type. The condition responded rapidly to massage and diathermy and the patient was able to leave hospital in less than a week's time. She was walking, but not perfectly. Further treatment was to be continued as an out-patient.

CASE 2.—A primigravida had a very long labour, the membranes rupturing early in the first stage. She had poor pains in the first stage but complained bitterly of them. She was very difficult to control and was given opoidine and hyoscine hydrobromide. She complained during labour of severe pain in her left leg and said that it was paralysed, though movements of the limb were unimpaired. The presentation was vertex, right occipito-posterior, manual rotation was performed, and a stillborn child was eventually delivered by forceps. The patient was an extremely nervous and emotional woman. The puerperium was uneventful except that she said that her leg still felt numb. On getting up on the tenth day she was seen to drag her left leg behind her when she walked. On examination the nervous system was normal except for a slight increase in the force of the knee-jerks. She was treated by massage and diathermy and discharged in ten days walking well and without pain in the leg.

The two cases form an interesting contrast. In the first the paralysis occurred in a normal placid type of patient after a rapid easy delivery. The second patient was a highly nervous neurotic woman. Labour was prolonged and difficult.

I am indebted to Prof. Louise McIlroy and Dr. W. M. Gray for permission to publish these cases.

RAMSGATE HOSPITAL.—Dame Janet Stancomb-Willis has provided a home for the nursing staff at Ramsgate Hospital at a cost of £10,000.

THE NEW BETHLEM.—The plans of the new Bethlem Hospital on the Monks Orchard Estate have been completed and approved by the Governors. At the request of the Charity Commissioners the Board of Control are satisfying themselves as to the adequacy of the scheme, both as to building and cost. The total income of the hospital last year was £52,614, the expenditure exceeding it by £175. A total of 516 patients were treated (221 males and 295 females). Three hundred and eight persons were discharged; the percentage of recoveries on direct admissions was 56·38. Two hundred and ninety-eight persons were admitted, of whom 112 were paying patients. There were 27 deaths.

BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING AT EDINBURGH.

(*Continued from p. 337.*)

SECTION OF OBSTETRICS AND GYNÆCOLOGY.

WEDNESDAY, JULY 20TH.

THE RELATION OF PREGNANCY TO GENERAL DISEASES.

AT the first meeting of this Section, under the presidency of Dr. J. H. FERGUSON (Edinburgh), Prof. MUNRO KERR (Glasgow) opened a discussion on this subject and spoke of

Heart Disease.

He pointed out that it was not yet decided whether the left ventricle hypertrophied during pregnancy or whether the extra effort was brought about by its latent reserve. Recent studies by Jensen and Norgaard showed that cardiac hypertrophy was normal and was associated with dilatation in 60 per cent. of pregnant women. In late pregnancy the heart was displaced upwards and backwards. Normally there was no change in blood pressure, but variations readily occurred from metabolic disturbances. Next to examination of the urine, estimation of the blood pressure was the most important detail in antenatal examination. The pulse-rate was very easily disturbed in the later weeks, and the increase in body-weight, blood volume, and cardiac output all played a part in producing variations. Some of the functional disturbances encountered were due to pressure from the uterus; others were caused by disturbed innervation, altered metabolism, and glandular activities.

In the real organic cases there was general agreement that it was the condition of the heart muscle that determined the gravity of the case, but the problem was complicated by the insidious metabolic and glandular variations of pregnancy. Coöperation between physician and obstetrician had resulted in a general consensus of opinion on the distress signals and treatment. Figures from the Royal Maternity Hospital at Glasgow showed a mortality of 22 per cent.; the average figure lay between 15 per cent. and 25 per cent. All the fatal cases in Glasgow suffered from mitral disease.

Danger Signals.—It was most important that cardiac cases should be sent into hospital in time to give medical remedies a fair trial. All evidence indicated a general tendency to earlier and more pronounced decompensation with each succeeding pregnancy. A history of unsatisfactory or easily unbalanced compensation before the pregnancy gave cause for special anxiety. General evidences of failing circulation were more important indications of danger than occasional cardiac irregularity. The prognosis became grave when cyanosis, œdema, albuminuria, and continuous crepitation appeared. For such cases Prof. Kerr always tried medical treatment for a week or ten days before terminating pregnancy. Where the heart was enlarged and other organs markedly disturbed the pregnancy should be stopped as soon as possible. Aortic regurgitation was not very common in pregnant women, but if uncompensated was very serious, especially with a "Corrigan pulse." Operative treatment should not be too long delayed, as once decompensation developed it was generally impossible to arrest it. Prof. Kerr's experience of mitral regurgitation agreed with that of Lennie, that if the cardiac muscle were satisfactory the prognosis was good. Mitral stenosis was the most difficult to gauge and most often caused anxiety.

Treatment.—While in many cases the shortening of the second stage by forceps was all that was necessary, constant consultation between physician and obstetrician was required to determine the exact moment when operative interference was best indicated. The operative intervention was often the immediate cause of death, either through delay or through selection of the wrong method. Emptying the uterus was not a simple matter, and it was most important to choose the method which would cause the least shock. In the early months the cervix must be dilated, and stretching a sphincter had a pronounced depressive effect on the heart. If it were done gradually by tents time was lost, and tents were difficult to introduce aseptically in a primipara. The operation of election was vaginal hysterotomy. During the later weeks introduction of bougies was difficult in the primipara and there was no guarantee against one or two days' delay. The speaker was convinced that Cæsarean section would prove the accepted treatment of the future. The mortality figures in Lennie's series of 17 cases was 11 per cent., although including some of the worst cases, while the death-rate from the bougie method was 44 per cent. Moreover, this operation allowed sterilisation and even hysterectomy in cases where it seemed advisable to stop the menstrual flow without interfering with the ovaries. Even where labour came on spontaneously there was an advantage in Cæsarean delivery, as the shock of dragging a child through the undilated vagina of a primipara was grave. The anæsthetic was a factor of considerable importance.

The Puerperium.—Quite often heart failure set in three or four days after the labour had been successfully tided over. Two factors probably played a part in this: degeneration of the hypertrophied muscle-fibres and absorption from the decidual débris. Autopsy often showed evidences of a superimposed acute endocarditis. The puerperium therefore demanded particular care and attention.

Tuberculosis in Pregnancy.

Dr. E. RIST (Paris) said that the belief of Hippocrates, that pregnancy was a cure for consumption, had not been fully eradicated; some medical men still believed that consumptive women could bear children without paying heavily. Since we had learned to distinguish between the infection and the disease we had ceased to rely on general symptoms. The most fundamental signs were the demonstration of a lesion by X rays and the presence of bacilli in the sputum. While many cases of tuberculosis were overlooked it was by no means uncommon for other morbid conditions—some harmless, some serious—to be treated as tuberculosis. It was this diagnostic doubt that accounted for the differences of opinion as to the effect of pregnancy. Statistics based on reliable diagnostic criteria invariably showed that pregnancy led to an aggravation of symptoms, to the extension of existing lesions, to the production of fresh ones, and to the flaring up of those quiescent. The few exceptions were women with very mild fibrotic tuberculosis. The speaker's figures showed that 89 per cent. of his phthisical patients were made worse by pregnancy, and 58 per cent. died after one or two years. Most commonly the patient had been in good health before pregnancy, and consumptive symptoms appeared during pregnancy or the puerperium. There was no better criterion of cure in a treated tuberculous woman than the ability to bear a child without mishap. It had been found that 20 per cent. or more of pregnant women lost their capacity of giving a positive skin reaction to tuberculin and only recovered it some time after parturition. Pregnancy seemed to be one of the causes which diminished the specific allergic resistance to tuberculosis, but the reason was far from clear. Dr. E. Couland, of Paris, had shown that abortion and castration had the same effect, while the advent of puberty or the menopause and of each pre-menstrual phase might be accompanied by a marked failing of the skin reaction. The effect of menstruation on tuberculous symptoms was well known, and a high proportion of cases occurring in later life began at the menopause, while Couland had collected a number of cases where it followed double ovariotomy. In his opinion the hyperactivity of the thyroid was the connecting link. People with an abnormally low thyroid action rarely got consumption, and then only in a mild form.

Treatment.—There had been considerable opposition to operative interference. If abortion were accepted as the correct measure it would frequently be done

unjustifiably or unnecessarily, nor had it been proved efficient in arresting the course of the disease. It might be quite as unfavourable as a confinement. Artificial pneumothorax should be tried wherever it was possible; it had been proved to interfere in no way with the favourable course of pregnancy and labour, and so had the advantage of saving the child's life in many cases. Dr. Rist then gave the figures of a study of 58 women for whom pneumothorax had been tried. 27·5 per cent. were successful, but among women so treated before pregnancy started the results were much more encouraging. The older the pneumothorax when conception occurred the better. If a woman who had been treated in this way had been clinically well for two years there was no reason why she should not become pregnant; but the collapse should be maintained during the first trial and for at least six months after confinement, and she should not nurse the baby.

Prof. F. J. BROWNE (London), speaking of

Venereal Diseases in Pregnancy,

dealt first with syphilis. He laid special stress upon methods of diagnosis and emphasised the great value of an examination of the ovum in the diagnosis of syphilis in the mother. The mother of a syphilitic child was always herself syphilitic, although a syphilitic mother might occasionally give birth to an infant in which no sign of syphilis could be detected. He pointed out that it was essential to give treatment in each successive pregnancy, whether the patient appeared to be cured or not. He next dealt with some of the difficulties in diagnosis and treatment of gonorrhœa and with the value of a negative smear.

The following principles were laid down as essential for the proper management of cases of syphilis and gonorrhœa in pregnancy.

1. A routine Wassermann test should be carried out in all antenatal clinics.
2. The treatment clinic should be in the maternity hospital and not in an ordinary V.D. centre.
3. The treatment was best carried out by women doctors.
4. Beds should be provided in every maternity hospital for cases of venereal disease. They were necessary for patients with acute or complicated gonorrhœa, for those who lived too far away to attend regularly for treatment, and for those who suffered from venereal disease along with other complications of pregnancy requiring indoor care—e.g., albuminuria or heart disease. These beds should not be labelled "V.D.," but should be classified and referred to as "antenatal," and be a part of the antenatal department.
5. A pathologist should be available who is able to examine the ovum for evidence of syphilis.
6. A list of infants believed or suspected to be suffering from syphilis should be sent monthly, or oftener, to the child welfare medical officer, so that he can follow them up.
7. A follow-up nurse was essential to hunt up patients who failed to attend regularly for treatment.
8. There should be the closest touch between the maternity V.D. clinic and the ordinary V.D. treatment centre in order that cases may be referred for postnatal treatment and that the husband may also be treated effectively.

General Discussion.

Dr. GIBBON FITZGIBBON related a series of 22 cardiac cases which had occurred among a total of 13,000 confinements during his mastership of the Rotunda Hospital. They were all cases of failure of compensation and showed a mortality of 22·7 per cent. From a review of these he divided such cases into three groups for prognosis. The first included those in whom decompensation only occurred as a result of labour and in whom prognosis was good. The second group was that in which decompensation occurred during pregnancy; if treated early and especially in a young primipara the prognosis was good, but was bad in the third group where decompensation was neglected until the onset of labour. The prognosis for the infant was good when the mother was treated. Decompensation did not tend to develop until the second half of pregnancy, but its onset was found progressively earlier as the number of pregnancies and the age of the patient increased. Over 75 per cent. of compensated primigravidæ would go to term; one-third of them developed failure in labour, but they delivered themselves of living infants and recovered. Only 50 per cent. of multigravidæ would go to term, and rather more of them than of primiparæ showed heart failure in labour. Compensation was more difficult to re-establish during pregnancy in a multipara than in a primipara, and there was a marked tendency to relapse during labour. After treatment the pregnancy almost always ended at the 36th or 37th week. Cardiac lesions tended to produce abortion and diminish the incidence of pregnancy. Women who had shown no signs of heart failure might continue through labour, with especial care during the last eight weeks in a primipara and 16 weeks in a multipara. The latter would probably be best delivered by section at the 36th week if symptoms of failure had appeared, and should be sterilised. If symptoms appeared before the 30th week she should be delivered as soon as possible, as it was most unlikely that pregnancy would continue until a date of viability. Labour during decompensation was easy and rapid. In a subsequent pregnancy the case of decompensation in labour should be kept at rest from the 24th week, and pregnancy should be ended at the 36th week by section with sterilisation. The case of decompensation during pregnancy should never be allowed to continue with another pregnancy. Induction of labour had no place in the treatment of decompensation, and at other times would be better replaced by section and sterilisation.

Sir EWEN MACLEAN quoted the opinions of those who had had large experience of tuberculosis and pregnancy—Dr. D. A. Powell, tuberculosis physician to the Welsh National Memorial Association, and Dr. A. Brownlee, of the Glan Ely Tuberculosis Hospital. Their attitude was less pessimistic than that of Dr. Rist. He agreed that many diagnostic mistakes were made in recorded cases. The supposed improvement during pregnancy might be due to the altered metabolism, giving an appearance of better health. It might also be partly due to the pressure of the uterus on the diaphragm, acting in the same way as phrenicotomy. Dr. Powell said that tuberculous women need not avoid marriage, but no risk of pregnancy should be incurred until three years after the disappearance of signs and symptoms. If pregnancy occurred during the course of the disease it might be allowed to go on if there was no infection of the larynx or, in surgical cases, of the hip or spine.

Prof. LOUISE MCILROY did not agree with Prof. Kerr's pessimistic outlook on cardiac cases. No other class of case had illustrated so well the value of antenatal work. She showed tables of 158 unselected cases, of whom 2 per cent. died. Rest was the keynote of the treatment; it was no use to flog the failing heart of a poor working woman with digitalis and other stimulants. The obstetrician was useless in the diagnosis of heart conditions; the physician must be consulted. At the Royal Free Hospital an electrocardiogram and a weekly antenatal cardiac clinic had been instituted. The majority of cases seen were mitral; next in number came the "toxic" heart. Only when every form of medical treatment had been tried in vain should pregnancy be terminated. If abortion was done once it would have to be done many times; the patients would come back again and again. It was a rule at this hospital never to do Cæsarean section unless the patient were in labour, and this had greatly reduced the number. Many apparently hopeless cases would go through labour easily and normally. Many young women might be able after some years of treatment and care to have a child again without danger; sterilisation, therefore, was not desirable, and such cases were supplied with a Dutch cap contraceptive pessary on leaving hospital. The speaker did not approve of subtotal hysterectomy, as the absence of the menstrual outlet produced bad effects on the blood pressure. She laid stress on the break in the continuity of treatment of the tuberculous mother. The sanatorium would not keep patients after the seventh month and they were often sent out to a poor home under the worst possible conditions. This was one of the reasons for relapse after the confinement, and public health authorities should

be forced to provide an institutional home for them. Continuity of treatment was also of great importance in venereal diseases. Cases at the Royal Free were put in a special ward and visited weekly by the V.D. specialist and sent back to the V.D. department after delivery.

MRS. M. MACNICOL (Edinburgh) urged that syphilis and gonorrhœa were quite different problems and that it was time to drop the obsolete common term "venereal disease." Syphilis could be accurately diagnosed and fully and satisfactorily treated; in gonorrhœa the reverse was the case. Among the last 150 cases sent to her with persistent discharge, all clinically chronic gonorrhœa, not one had shown the gonococcus at the first taking of a film. It was most important to impress on all syphilitic patients that they must report for treatment when next they became pregnant. The usual course should then be given whether there were indications for it or not. Antisyphilitic treatment was often justifiable and successful in cases of repeated miscarriage and still-birth, even if the Wassermann were negative. There had been two cases of sudden death at the second intravenous injection of arsenic after confinement, so that the speaker now made it a rule not to start treatment before the third month. The number of women suffering from purulent infective discharges during pregnancy was never realised before the establishment of antenatal centres. The cervix might be found bathed in pus, teeming with micro-organisms, even when no discharge was complained of. The discomfort and damage to health so caused could not be exaggerated. In-patient treatment was not possible or necessary; patients did well on bi- or tri-weekly cleansing. Acriflavine and gelatin pessaries were very useful and should be followed 12 hours later by lactic acid swabbing. One of the worst features of gonorrhœa was the sudden unexplained lighting up of a salpingitis or ovaritis after parturition. Usually, however, the puerperium of carefully treated cases was uneventful. Sometimes the condition could not be cleared up and a certain amount of purulent discharge, inflammation, and irritation subsisted. This was worse in the last week or ten days, when the head was in the pelvis. Therefore where there was erosion and profuse discharge the woman should be admitted during the last three weeks of pregnancy. The results of treatment became manifest after delivery, although in some cases a discharge persisted through lactation.

Dr. E. K. MACKENZIE (Tain), speaking from the experience of a rural practitioner in the Highlands, said that mitral stenosis in primiparæ and aortic incompetence in multiparæ had given him most trouble. The former had a strong tendency to cause distressing symptoms after the sixth month. He treated his cardiac cases by rest, not often easy to enforce, some modification of the usual flatulence-producing diet of the crofter, a morning dose of salts, and a weekly blue pill in the later months. He only gave digitalis if there was fibrillation of the auricle; it was best given in Guy's pill. It was surprising how well patients went on. He assisted labour with morphia, but found that hyoscine caused depression and mental distress, while pituitary extract was dangerous even when it would be helpful in other cases. When the head reached the perineum he administered light chloroform anæsthesia and helped delivery with gentle traction on the forceps. The most distressing feature of aortic cases was the mental disorder so often encountered; it included alienation from family and friends and abusive excitement, and was a potent factor in producing heart failure. Palliatives helped the patient to carry on, but abortion gave immediate mental relief with no memory of the excited phase. He induced labour before full term and used morphia and hyoscine, with pituitrin in repeated small doses.

Dr. R. H. PARAMORE (Rugby) suggested that the reason why the blood pressure was not raised in normal pregnancy was that the skull and limbs received a greater blood-supply; this explained the tendency to right heart failure. He advised hysterectomy if the Cæsarean operation were to be performed, because this removed from the kidneys the strain of dealing with the products of puerperal autolysis.

Prof. R. G. MCKERRON (Aberdeen) said that pregnancy with advanced heart disease was always a serious matter, and its treatment aroused much difference of opinion. Interruption of pregnancy in the early months was very seldom necessary.

Mr. D. LEES (Edinburgh) declared that the end-result of gonorrhœal smears was not worth the paper it was written on. He mentioned the significance of leucodermia and melodermia in the neck as pathognomonic of syphilis and the value of a provocative injection of salvarsan three or four days before doing the Wassermann test. He urged continuity of treatment for venereal diseases and agreed that the term was undesirable as a large proportion of the patients did not suffer from disease venereally acquired. They should be handled in the gynæcological department. Syphilis rarely caused high blood pressure, but was not infrequently the source of heart lesions which responded well to antisyphilitic treatment.

The PRESIDENT recalled a case of double aortic and mitral lesions where the woman had had five children, illustrating the value of allowing old-standing cases a chance. A frequent cause of collapse after delivery was the accumulation of blood in the right heart; venesection would bring such patients back from the gate of death.

Prof. MUNRO KERR, replying, said that he agreed with the President about blood-letting and with Dr. Paramore about the value of hysterectomy, and admitted the importance of recognising the syphilitic heart. His cardiac cases were very grave ones only; had he included all patients his figures might be more like Prof. McIlroy's.

Dr. RIST, in reply, explained the experience on which he based his pessimistic attitude. He thought that if obstetricians followed up their tuberculous patients over long periods of years they would come to agree with him. They seldom saw the almost cataclysmic exacerbation when the patient returned to the physician. He did not think the effect of pregnancy on the lungs could be compared with that of phrenicotomy, as in the latter case the movements of the diaphragm were not only impaired but actually reversed.

THURSDAY, JULY 21ST.

At the second meeting, under the chairmanship of Dr. GIBBON FITZGIBBON, Prof. R. W. JOHNSTONE (Edinburgh) opened a discussion on the

Hygiene of Menstruation in Adolescents.

On wise management early in the reproductive life, he said, often depended the happiness or misery of a woman's later years. The changes of puberty and adolescence concerned not only the reproductive organs but the girl's entire organism. Modern research had suggested that all the glands of internal secretion played a part in the development of the secondary sex characters, and so it was obvious that this period was a very critical one. Although the whole organism took part, the sex organs were the star performers, and Nature was concerned almost entirely with reproduction. If other functions were developed at the expense of this one Nature exacted a heavy penalty. During adolescence the reproductive organs called for an especially good supply of blood and nerve energy, and the extensive diversion of these to the muscles or the brain was probably responsible for many disorders of menstruation and reproduction.

Menstruation was a natural phenomenon, and the ideal to be aimed at was a natural life. In terms of civilisation that meant "moderation in all things." Too strenuous a life, too much physical or brain work, too much frivolity, and serious irregularity might do irreparable damage. Almost as dangerous, however, was the fostering of the idea in a girl's mind that she was a subject of very special physical delicacy in these periods. This attitude was a relic of the past, based

on the mystery which until recently had enshrouded menstruation. The Jews to this day believed that it was a cathartic process and that a menstruating woman was in some way impure, to be forbidden a part in ordinary social and religious life. From this developed the belief that menstruation, especially at its beginning, produced a delicacy which debarred the woman from active exercise or work. There was in this idea a certain amount of truth, but the unfortunate side of it was the implication that menstruation was pathological—vide the expressions "unwell," or "poorly," and the reticence surrounding the whole subject. The profession had to dispel the relics of this tradition. A sane outlook would do away with much dysmenorrhœa, as did the exigencies of war service. Finally, girls should be taught the significance of the menstrual function, better individually than in class, and preferably by their own mothers. To allow them to acquire distorted or evil ideas haphazard was to imperil their happiness.

School Life and Irregular Menstruation.

Dr. J. H. P. PATON (St. Andrews) stressed the importance of laying down a high level of general health before puberty. This was secured nowadays by regular school games. Although many girls could play games during the period with advantage, he thought that the rule at St. Andrews, of stopping games for the first three days and substituting walking exercise, was a good one. He exhibited tables to illustrate the incidence of dysmenorrhœa in this school, and showed that the percentage of total immunity was very high. 78 per cent. had no pain and 90 per cent. had no regular pain. Habits between periods were, he said, more important than habits during the period itself.

On the subject of regularity his statistics proved that intermittent amenorrhœa was the rule up to 16. Regular menstruation was rare at 13 and 14—only 20 per cent. of the girls claimed it; at 16 the figure was better, 46 per cent., and at 17, 18, and 19 it rose to 62 per cent. These figures were alarming, for if the common belief was true they indicated a persistent deficiency of ovarian secretion in a large proportion of the mothers of the future. Many girls menstruated regularly in holidays and irregularly at school, and the reason was undoubtedly the long hours of continuous mental and physical effort imposed by the modern school curriculum. He quoted authorities for the assertions that strenuous work and play meant a poor flow, and that women employed in industry had a low fertility-rate. The anxiety connected with competitive examinations and games was another factor in irregularity. He complained of the lack of comparative statistics from which the effect of varying activity could be inferred.

Growth and Weight.

Dr. ALICE SANDERSON CLOW (Cheltenham) compared the ages of onset in a group of schoolgirls and in a group of girls at a training college. In the former group the usual age was 13, in the latter it was 14. The schoolgirls were the children of well-off parents; the college girls came from humbler but not necessitous homes, and had usually been to elementary schools. The schoolgirls had a higher average of physique, and this might account for the earlier catamenia. She showed charts of the weight- and growth-rate in relation to the age of onset, to indicate an answer to the question of when delay should be regarded as pathological, and inferred the important rule that, so long as weight increased and growth continued, no anxiety need be felt at the absence of catamenia. Failure of the secondary characters to develop after 17 was very rare. Menstruation should be free from suffering of any kind, and adequate medical attention would help to bring this about. Dr. Clow remarked that even in these days most educated mothers taught their daughters to consider themselves ill at the period. She had found that girls were delighted to be allowed warm baths, games, and gymnastics, which latter she advised especially on the first two days. Her instruction had reduced the percentage of sufferers from 46·7 to 10·8 in 13 years. Girls engaged in standing and sedentary occupations were the most liable to dysmenorrhœa, which could be largely abolished by 15 minutes' exercise a day in the open air. Neurotic disturbances were best treated by sound instruction, and by advising healthy activity of body and mind.

Dr. ETHEL VAUGHAN SAWYER agreed that menstruation should impose at the worst a slight lassitude on a healthy woman. There was a close connexion between painful menstruation and toxæmia, especially that resulting from measles or scarlet fever, which caused slight degeneration and loss of tone in the uterine muscle. This was most frequent if the infection occurred at 13 or 14; catamenia was then usually delayed until 15 or 16. "Congenital" ante- and retro-flexion were really, she thought, due to a softening of the uterine muscle resulting from a toxæmia following one of the childish diseases. Concerning hygiene in schools, she recommended a warm bath every day during the period. Cold baths checked the flow, and warm baths stimulated it by easing congestion. Games were too strenuous, but walking, Swedish drill, and dancing were good.

The Psychology of Dysmenorrhœa.

Dr. G. I. STRACHAN (Cardiff) spoke of the subject from the psychological aspect. Gross menstrual abnormalities often occurred without affecting the mind, and menstruation, whatever the text-books said, might be unaffected even in the severest mental disorders. Minor mental disturbances were very rare in the early months of the function. He recommended individual instruction, but questioned whether the mother was necessarily the best person to give it. It was not necessary to insist on any rule, either of continuing to play games or of lying down; the girl should do what she liked. Re-education in healthy living was the treatment for dysmenorrhœa in the absence of obvious organic trouble.

The CHAIRMAN agreed with Dr. Clow that girls in comfortable circumstances and of healthy habits started menstruation considerably earlier than others. Those developing dysmenorrhœa between 20 and 25 usually gave a history of early measles, scarlatina, or septic tonsils, which set up pelvic peritonitis with damage to the ovaries and tubes.

Prof. LOUISE MCILROY (London) said that every normal girl ought to be brought up to ignore menstruation entirely and do what she wanted, but that doctors should not let this principle prevent them from detecting pathological dysmenorrhœa. Menstrual troubles often arose after a girl left school, because she was relatively unoccupied. Unhappy marriage was another cause. Among girls doing manual work the incidence was low, but it was high among sedentary workers. The speaker recommended dancing as the best exercise for the period. Games had nothing to do with fertility, but competitive games and examinations might produce bad after-effects. Intellectual work was an important adverse factor. Contrary to Dr. Strachan's experience, she had found that mental patients suffered from long periods of amenorrhœa, which curettage, an objectionable operation in many ways, did not improve.

Dr. CATHERINE CHISHOLM (Manchester) mentioned two factors producing dysmenorrhœa: nervous strain and overwork with consequent failure of the general health. Examinations caused a failure in health and so made the period painful, and the girl's fear of the next completed a vicious circle. Girls should be taught to report dysmenorrhœa to the doctor, and general practitioners should regard the condition as important. Games were permissible as long as the girl was fit, but they should be part of the curriculum and not a heavy addition to it. This was a fault more common at day-schools.

Dr. MABEL RAMSAY (Plymouth) said that her only dysmenorrhœa patients nowadays were factory workers of about 21, and employers would find it an economic advantage to provide regular exercise. Pathologically-delayed catamenia might be a result of early under-

feeding. Mumps was a virulent source of pelvic trouble. She advocated cold baths and swimming.

Dr. E. FARQUHAR MURRAY (Newcastle) said that amenorrhœa in older girls was often associated with under-development of the uterus, and the patient was then sterile. Another symptom of this was a very scanty discharge and dysmenorrhœa. Very early treatment gave the only chance of improvement. Some authorities recommended ovarian extract and thyroid.

Dr. R. WATSON (Belfast) spoke of the girl with an excessive discharge, who lost blood in serious quantities. She generally had a small uterus which went very soft. The treatment was rest and open air, with Easton's syrup and 1 gr. of ovarian extract three times a day. The speaker deprecated the use of curettage and radium, though Bonney's operation had given good results with one patient who had refused medical treatment. He suggested that many dysmenorrhœa sufferers had a small os.

Dr. LILIAS JEFFRIES (Brighton) condemned the rule forbidding exercise and games, making a girl consider herself sickly for three days out of 28. It was sufficient to require the girls to report the period to their house-mistress, who would leave the hardy ones alone. A most important cause of trouble was constipation due to hurrying into school after breakfast and omitting the duty of clearing the bowels. Ordinary practice games were innocuous, but seabathing ought to be given up.

Prof. J. HENDRY (Glasgow) stressed the importance of the general health between periods, advocating very vigorous exercise, like tennis and badminton, for strengthening the abdominal walls and toning the muscles generally, especially just before the period.

Dr. J. H. FERGUSON (the President) remarked that anæmia had diminished in Scottish girls' schools with the improvement of the curriculum.

Dr. W. F. T. HAULTAIN (Edinburgh) put down constipation to drinking too little water, and advised an aperient during the period, a time when bowels were apt to be sluggish. Games and warm baths were useful then, as they stimulated the flow.

Dr. R. T. SUTHERLAND (Melbourne, Australia) wished each girl to be considered as an individual and not subjected to a general rule. He praised the shower-bath, so rare in English schools.

Prof. JOHNSTONE, Dr. PATON, and Dr. CLOW replied.

FRIDAY, JULY 22ND.

At the third meeting, under the presidency of Dr. J. HAIG FERGUSON, the proceedings were opened by a paper from Dr. F. A. E. CREW (Edinburgh) on the

Effect on the Sex Ratio of Conception Early and Late in Relation to the Œstral Cycle of the Rat.

Dr. Crew reviewed the history of scientific opinion on this matter, and pointed out that Thiery in 1863 had maintained that the ovum when first extruded was female, but that at some point in its passage it became male. Thus fertilisation immediately after ovulation would produce female offspring, and later would produce males. Experiments had shown that, if an interval of 89 hours passed between the first and the second fertilisation in the frog, the second half of the eggs were all males, a result which could only be explained by saying that the effects of delayed fertilisation were such as to transform their metabolism, turning them from determined females to determined males. The same results were obtained by desiccation of the toad's egg. Work on the ringdove had suggested the statement that a high metabolic rate led to a physiological state of maleness, and Riddle had extended this to cattle. It was not yet established that the egg does take up water from the genital tract, or that results recorded for amphibia might be applied to mammalia. Nevertheless, there was a suggestion that sex reversal before fertilisation might be possible. A marked difference in the sex ratio of calves from early, late, or middle service in relation to the œstral cycle of the cow had been claimed. It was, however, impossible for the breeder to tell which stage of œstrum a cow was in, but with the new method of vaginal smears the phases of the rat could be accurately determined. Dr. Crew then described some experiments performed by himself on the rat, and the precautions necessary to eliminate secondary factors. When the female was fertilised in the first three hours of œstrus proper, the result of 35 litters was 98 males and 91 females, a sex ratio of 51·84. There were 15 pseudo-pregnancies. When she was fertilised in the last three hours the result of 28 litters was 77 males, 82 females, ratio 48·43. Pseudo-pregnancies numbered 22. Dr. Crew observed that no one experiment could cope with the numbers necessary for decisive conclusions. It was important for such experiments, therefore, to be multiplied and correlated. He concluded that, so far as they went, these results tended to support the conclusion that time of service is a factor of no importance in the determination of sex in the mammal. He added, however, that recent work pointed to the fact that staleness of the egg was associated with a disturbance of its general metabolism which seemed in some cases to be such as to lead to a complete transformation of its characteristics.

In reply to a brief discussion, Dr. Crew added that obstetricians would not long be allowed to plead ignorance of this matter. It was important that out of the accumulation of knowledge should come power. In the human being it had been stated that the egg played no part whatever; there were two kinds of spermatozoa, which determined sex. Recent work, however, showed that the story was not so simple. This mechanism could only operate normally in a perfectly normal state of the zygote, and the directing action of the sex-determining mechanism could be transformed by any disturbance in the general physiology of the egg.

Prof. W. FLETCHER SHAW (Manchester) then read a paper reviewing his experience of

Uterine Fibroids after the Menopause.

He said that fibroids might cause symptoms over a long range of years, but that most patients began to complain between 45 and 50. In considering the advisability of operation the two points to be considered were: (1) that the menopause was often delayed in such cases, and (2) the possibility of malignant and degenerative changes in the fibroids afterwards. The more experience he had the more he was impressed with these serious later complications. Removal in a healthy woman of about 50 entailed very slight risk; but the risk was gravely increased in a woman over 60 in whom long degenerative changes had produced chronic ill-health. During the last six and a half years he had operated on 62 patients, eight of whom were over 60 and three over 70. The symptoms were:

1. General ill-health. Three cases had been too ill for operation; many had been enfeebled by a very large fibroid and prolapse with increasing pressure symptoms, reducing them to a miserable existence.
2. Malignancy: three sarcomas and three adenocarcinomas.
3. Hæmorrhage after the menopause without malignancy.
4. Acute pain due to advanced degenerative changes; associated in two cases with profuse hæmorrhage.
5. Chronic pain.
6. Torsion—a rare complication, but two cases occurred in this series. The onset of symptoms might be acute or subacute.
7. Torsion of the pedicle of a subperitoneal fibroid: two cases.
8. Pressure symptoms. The normal post-climacteric shrinking of fibroids sometimes allowed a previously abdominal tumour to sink into the pelvis, causing retention of urine, pressure on the rectum, or bearing down. Occasionally the growth increased in size instead, and led to frequency of micturition or swelling of the legs.
9. Rapid increase in size, generally due to cystic degeneration.
10. Absorption of degenerative products, producing general ill-health, loss of weight and appetite, and anæmia.
11. Ascites, due to calcareous degeneration which irritated the peritoneum.

He urged the importance of removing fibroids early when the patient could stand it, and obviating the risk of these later troubles.

Dr. BETHEL SOLOMONS (Dublin) agreed, and said that the people who were advocating X rays were

probably working in the wrong direction. He had seen cases so treated in whom malignant degeneration had occurred and who had been quite inoperable when discovered. To the general practitioner the reflex symptoms caused by fibroids were very important; he had known nervous symptoms, vomiting, and so on, relieved by removing a fibroid uterus. Stovaine spinal anæsthesia was the method of choice in some of these cases. Prof. LOUISE MCILROY, Dr. GIBBON FITZGIBBON, Dr. J. YOUNG, and the PRESIDENT expressed their agreement. Prof. SHAW, in reply, remarked that text-books said nothing of what happened to fibroids after the menopause. A fibroid uterus had a very much greater chance of becoming malignant than one which had no fibroid. Though he would not say that every fibroid should be removed, yet, taking the risk of malignancy with that of degeneration in a large fibroid, he would say that every large one ought to be taken out. Spinal anæsthesia was the best method unless the anæsthetist were a real artist.

Dr. DANIEL DOUGAL (Manchester) then presented a review of 100 cases of

Ectopic Pregnancy.

Of these 51 per cent. had aborted, 37 per cent. had ruptured, and 12 per cent. remained unaborted and unruptured. The chief predisposing factor was a preceding pelvic infection, which might be visible at operation, except that the results of gonorrhœa were often limited to the tubal mucosa. At least 50 per cent., however, would show old-standing adhesions about the non-gravid tube. In addition, puerperal septic infection, abdominal tuberculosis, and appendicitis played an important part; 59 per cent. of tubal pregnancies were on the right side. Developmental abnormalities were contributory causes, and 2 per cent. of cases had fibroids. Age was of no importance, ranging from 21 to 43. 48 per cent. occurred during the first five years of marriage, and 35 per cent. during the second quinquennial period. 10 per cent. of the patients had been married a year or less. In the newly-married and apparently healthy woman some other cause must be sought; one-third had never had a previous pregnancy, while 10 per cent. had had a uterine abortion as the result of the only previous fertilisation. The series showed some support for the view that ectopic gestation followed a period of sterility. The diagnosis was based on a symptom-complex including amenorrhœa—not usually longer than two months—irregular uterine hæmorrhage, and abdominal pain. Very acute cases, where the peritoneal cavity was flooded with blood, might complain of shoulder-pain. The bleeding continued after the decidua had come away; it might be due to chorionic villi left in the tube. The importance of the symptoms depended on their combination; all three were present in 64 per cent., and bleeding and pain in 24 per cent. The order was amenorrhœa, pain, bleeding. There were three clinical types: (1) where the ovum stayed in the tube, causing little or no hæmorrhage into the abdomen, 13 per cent.; (2) profuse intraperitoneal hæmorrhage, 27·6 per cent.; and (3) gradual or repeated hæmorrhages, 62 cases. The patient might be prostrated by the profuse hæmorrhage or might react to it, so that when operated on she resembled a case of the third type. Investigation of the symptoms might reveal, in addition to the three cardinal ones, pain on micturition, dyspareunia, pain on defæcation, and retention of urine. The patient looked ill and had generally some degree of anæmia. The temperature might be over 100° F. The abdomen was tender and showed either a sensation of resistance over the pelvic brim or a tumour capable of displacing structures, but there would be no rigidity. The treatment was surgical, and the sooner the better; expectant treatment was dangerous, except to improve the general condition in severe cases of shock. The particular operation depended on the type of case and condition of the patient. The gravid tube should be removed. Some authorities removed both, as second cases in the remaining tube were not uncommon, but this was going too far, as many had normal labours subsequently. The prognosis was good; there had been no deaths in his series; 43 cases had no further pregnancy; 46 per cent. had subsequent uterine pregnancy; and 13 per cent. ectopic.

Dr. MABEL RAMSAY (Plymouth) related her experience of ectopic cases, and Dr. H. LEITH MURRAY (Liverpool) maintained that repeated peritoneal tearing was most unusual, as an investigation of his cases had never shown round-celled infiltration of the edges of tears. He strongly advised appendicectomy, as he regarded the appendix as a fruitful source of ectopic gestation.—Dr. BETHEL SOLOMONS spoke of the difficulty of diagnosis and the inconclusiveness of so-called tests for pregnancy. Diagnosis had to be made from general symptoms and sudden onset; even amenorrhœa was absent in many cases. He would rather operate on a kitchen table than move the patient.—Dr. FARQUHAR MURRAY mentioned referred pain in the upper abdomen and the importance of feeling for blood in the pouch of Douglas between a rectal and a vaginal finger. Ruptured ectopics revived remarkably if given a quarter of a grain of morphia and an hour or two's rest before operation.—Dr. W. FORDYCE (Edinburgh) said that rupture into the broad ligament was apt to be overlooked or mistaken for a retroflexed gravid uterus. The symptoms were pain and retention of urine, and it was impossible to define the uterus on examination. Palpation should be extremely gentle.—Prof. R. W. JOHNSTONE (Edinburgh) spoke of the acute pain produced by pressure on the posterior fornix.—The PRESIDENT remarked that ectopic gestation was often mistaken for ordinary abortion.

Dr. BETHEL SOLOMONS then read a paper on

Some Points in the Technique of the Low Segment Cæsarean Operation.

He said that the value of this operation was not recognised in some hospitals, and the technique should be standardised. No matter in what part of the uterus infection lay, the incision in the lower segment was safe. After describing his technique, and quoting illustrative cases, he said that the operation should be done on the patient who had been in labour some time and was not likely to deliver herself, and where the conditions necessary for pubotomy were not present. It allowed of subsequent trial-labour. It was also valuable in placenta prævia. In early labour where the baby was in danger, however, it had no advantage over the classic operation. The longer the labour had lasted and the higher the bacterial content of the uterus, the more advisable was the lower segment operation. The placenta should be delivered through the incision, and the abdomen should be drained for 48 hours in all suspicious cases.

Dr. G. FITZGIBBON spoke in favour of the lower segment section; it was bloodless and easy to suture. He had found that, where the head lay in the iliac fossa, it was not a case of bringing the head into the midline of the uterus, but of bringing the uterus into the midline of the abdomen.

Prof. MCILWRAITH, of Toronto, said that his clinic was turning from the high operation to the low, which had come to stay. He thought, however, that the classic section was admirably suited for placenta prævia.

Prof. J. HENDRY (Glasgow) agreed that the low operation was no good in placenta prævia, although excellent for cases long in labour.

Dr. BETHEL SOLOMONS, replying, justified removal of the placenta by consideration of the risk of catching it in suturing the wound and of adherent placentæ.

Dr. DOUGLAS MILLER (Edinburgh) then read a paper on

Failed Forceps Cases.

He reviewed a series of 500 emergency admissions to Edinburgh Royal Maternity Hospital; 74·6 per cent. were failed forceps cases, due chiefly to disproportion—contracted pelves or large heads. The pelvis was generally rachitic. In one type of case the trouble might not be recognised until the head had reached a low level and the possibility of Cæsarean section had

passed. Occipito-posterior presentations were a second common cause of difficulty—generally unrecognised. Forceps had usually been applied several times, and many patients had severe lacerations. In a third group there were no abnormalities; possibly they were cases of occipito-posterior presentation reduced during the journey to hospital. In the majority of cases, however, the forceps had apparently been applied before the head was moulded, through anxiety to save suffering. Dr. Miller stressed the significance of this series for prophylaxis. Whereas approximately one-third of them were seen by a doctor for the first time after the onset of labour, there had been but three failed forceps cases among 6000 odd patients who had attended the hospital antenatal department. Where moderate forceps traction failed to deliver, further action should be governed by four considerations: (1) What was the nature of the obstruction? (2) Was the birth of a living child per vias naturales possible? (3) If so, was immediate interference desirable or not? (4) If not, did the conditions warrant or forbid a Cæsarean section? There could be no hard-and-fast rule to determine between craniotomy and Cæsarean section when the child was dead. In conclusion, said Dr. Miller, this series showed the importance of antenatal care and routine measurements of the pelvis; the great danger of non-observance of the elementary rules of forceps application, particularly through an incompletely dilated cervix or in the presence of marked disparity; the necessity of recognising the nature and degree of the obstruction, and the remarkable capacity of Nature to overcome considerable disproportion by moulding. The condition rather than the number of hours passed should constitute the indication.

SECTION OF THERAPEUTICS AND PHARMACOLOGY.

WEDNESDAY, JULY 20TH.

THIS Section met under the Presidency of Prof. J. A. GUNN (Oxford). At the first session a discussion on

CLINICAL METHODS OF ADMINISTRATION AND THERAPEUTIC USES OF OXYGEN

was opened by Dr. H. WHITRIDGE DAVIES (Edinburgh) in the absence of Dr. E. P. POULTON (London).

Dr. Davies said that the need for administration of oxygen arose whenever the tissues were labouring under oxygen-lack. These conditions could be divided into three types: (1) anoxic, due either to lack of oxygen in the atmosphere or to impairment of gaseous exchanges in the lungs in pulmonary lesions; (2) anæmic, due to hæmoglobin deficiency; and (3) stagnant, due to impaired circulation. The untoward effect of all three conditions could be overcome more or less completely by the administration of oxygen, but the amount of oxygen required varied. In the anæmic and stagnant types it was necessary to increase the amount of oxygen in simple solution in the blood plasma. This could only be done by increasing greatly the partial pressure of oxygen in the alveolar air. If the subject inspired pure oxygen the amount of oxygen in combination with hæmoglobin would remain unaltered, but the amount in simple solution in the plasma would be increased to 2·2 volumes per cent., an amount sufficient to overcome the deficiency of oxygen in the tissues in some cases of anæmic or stagnant oxygen-lack. In the anoxic type such high alveolar pressure was seldom, if ever, necessary. Clinically, cases of pneumonia, pulmonary œdema, acute bronchitis, and other acute and chronic inflammatory diseases of the lungs fell into this category. Owing to inflammatory or œdematous thickening of the pulmonary epithelium oxygen passed into the blood less readily than normally, and increased partial pressure of oxygen in alveolar air was therefore required.

Dr. Davies went on to discuss the methods of administration in general use. The oxygen chamber was excellent when prolonged oxygen treatment was necessary, but its high initial cost, the necessity for skilled supervision, and the danger of fire restricted its use to a few large institutions. Similar results could, however, be obtained by closed-circuit methods of oxygen administration; he described various forms of apparatus and showed how the percentage of oxygen given and the percentage in the alveolar air could be calculated. Methods in which oxygen flow was automatically cut off during expiration were to be preferred for they doubled the efficiency obtained with any given flow of gas. The ordinary tube and funnel method of giving oxygen, which was even now seen in some hospital wards, was practically useless.

The earliest method by which oxygen could be administered in a quantitative manner was that of Haldane, which merely had the disadvantage that it was almost impossible to obtain an alveolar percentage of more than 60. Such a high concentration was, however, seldom necessary. A further disadvantage was that the apparatus afforded no means for determining the total respiratory volume per minute, and unless this was independently obtained it was impossible to calculate the alveolar air percentage. In order to overcome this deficiency Dr. A. R. Gilchrist and he devised a modified form of apparatus.[1] Precise knowledge of the alveolar air percentage was more than a mere academic nicety. Not only was there the satisfaction of producing a definite effect but also an estimate of the percentage of alveolar oxygen necessary to abolish the symptoms of oxygen-lack afforded a quantitative indication of the severity and extent of the pulmonary damage. When not more than 40 per cent. of alveolar oxygen was needed—i.e., when the rate of oxygen flow was not more than one-third of the respiratory volume per minute—the mask first used could be dispensed with and a forked nasal tube could be used instead which was much more comfortable for the patient.

The first criterion of successful administration was the abolition of cyanosis; but since oxygen-lack occurred before the advent of cyanosis rather more oxygen should be given than was necessary to abolish the cyanosis. The second criterion was the relief of dyspnœa. Respiratory embarrassment was always aggravated by oxygen-lack, but since it might be due to other causes it could not always be abolished by oxygen. The third was a fall in the pulse-rate. This was probably the most reliable criterion and occurred even in normal people when increased percentages of oxygen were breathed. It was even more marked in pathological cases. Oxygen therapy in pneumonia resulted in diminution of restlessness, promotion of sleep, and tendency to lessened delirium. Delirium should be prevented by early administration of oxygen for it could not always be cured by oxygen later. Very good results had been reported from oxygen administration in war gas poisoning and chronic bronchitis and emphysema.

A paper by Dr. W. T. RITCHIE (Edinburgh) was read in his absence by Dr. C. G. LAMBIE. All who were engaged in the practice of clinical medicine were, he said, confronted daily with the problem of anoxæmia in certain patients. Dyspnœa and cyanosis were the chief clinical manifestations of this condition. Dyspnœa preceded cyanosis and was often so urgent as to require immediate relief. Chronic anoxæmia might interfere with functional efficiency and ultimately lead to structural changes in organs. If dyspnœa and cyanosis were due solely to deficient oxygenation of the blood in the lungs, the deficiency might be met by adding oxygen to the inspired air. Unfortunately, the problem was not so simple; nevertheless, this was the basis of oxygen therapy. The methods of administering oxygen were far from satisfactory. The volume of oxygen delivered from the cylinder was only approximately known; we knew even less about the amount inspired by the patient, while that which diffused into his pulmonary capillaries was largely a matter of conjecture. The

[1] THE LANCET, 1925, i., 916.

amount given must be ample—not less than 2 litres per minute. Oxygen was rapidly absorbed and rapidly consumed, so any good effect derived from oxygen therapy was extremely evanescent. The oxygen should be given as continuously as possible. He recommended a moulded glass mask which he found less irksome than either an oral or a nasal tube. Haldane's apparatus was economical and reliable.

Oxygen therapy relieved dyspnœa and cyanosis in some patients. In others it was of no value, probably because in these the free entrance of oxygen into the alveoli was prevented. In other cases it failed because the dyspnœa was due to a pathological increase in metabolism as in hyperthyroidism. Oxygen was of no service in anæmia because of the lack of hæmoglobin to transport it. The dyspnœa of diabetic coma and the terminal phase of renal disease were not due to lack of oxygen, and could not be relieved by its administration. Cheyne-Stokes breathing could, however, be relieved by either oxygen or carbon dioxide. Dyspnœa was sometimes a symptom of an hysterical attack, and CO_2 relieved this condition but not oxygen. In the treatment of circulatory failure oxygen played a minor part. He used it in the later stages but found it of most benefit when intense dyspnœa had begun suddenly and recently, as in the early phase of auricular flutter, paroxysmal auricular fibrillation, and paroxysmal tachycardia.

It was in disease of the respiratory system that the need for oxygen therapy was greatest. Here the anoxæmia might be due to two factors: (1) the lessening of the volume of air entering the bronchioles, as in tracheal compression and bronchial asthma; and (2) interference with the diffusion of oxygen through the alveolar walls into the pulmonary capillaries, as in acute pneumonia and pulmonary emphysema. In emphysema oxygen afforded more relief than was attainable by any other means. Oxygen was especially helpful in pneumonia. Every pneumonic patient was dyspnœic, but he did not necessarily need oxygen. The indication for oxygen was cyanosis. The faintest trace was a call for oxygen, and the call became urgent when the cyanosis was pronounced. It should be given freely and as continuously as possible, and was of more value in acute lobar than in broncho-pneumonia. Anoxæmia was, however, only one factor in pneumonia; in profoundly toxic cases oxygen was of no avail.

Dr. REGINALD HILTON (London) compared various methods as measured by their power of raising the percentage of oxygen in the alveolar air. He regarded the tube and funnel method as absolutely useless if the funnel was held 10 cm. away from the mouth. The efficiency of the nasal catheter was manifestly less than that of the mask, but for ease and convenience it was the best. Analyses of arterial blood were quoted in two cases of pneumonia, which showed that by the nasal catheter even low rates of oxygen flow were able to raise the arterial saturation. The nasal catheter was the best to use in general practice, and should be employed as a routine in pneumonia, in which disease it was in many cases the most important therapeutic agent we possessed. The oxygen should be turned on before the catheter was connected to the cylinder, and the flow should be as rapid as was consistent with the patient's comfort. Dr. Hilton showed a new mouth mask which, he said, gave better results than could be obtained with the Haldane apparatus. The nares were closed with cotton-wool. He claimed that it was more comfortable than the face mask.

Dr. C. H. GREEN (Mayo Clinic, Rochester, Minn.) had been associated with Dr. R. M. Wilder in the comparative study of different methods of oxygen administration. The oxygen chamber was most efficient for the control of anoxæmia, but it was very expensive. An excellent substitute was the bed tent, a canvas cloth with an isinglass window which fitted over the head and arms of the patient. It contained an absorber to take out CO_2, there was a motor (the motor being outside the tent to obviate danger of fire) to keep up the circulation of oxygen, and ice to cool the atmosphere. 30–40 per cent. of oxygen was easily maintained in the tent, and with this amount it had been found possible to control cyanosis in broncho-pneumonia, post-operative pneumonia, and pulmonary embolism, which were the conditions of which he had most experience. In pneumonia the effects of oxygen therapy were lowering of the pulse-rate and temperature, the latter dropping 1–4°. In pneumonia there were more factors than simple anoxæmia, and the relief of cyanosis was of no avail if the patient was dying of septicæmia. He thought that the relation of the fall of temperature after oxygen administration to the immunity processes should be worked out.

Prof. C. W. GREEN (Missouri) said that he had studied the question of oxygen-want from the physiological angle. He wished to emphasise what Dr. Ritchie had said, that oxygen therapy cannot be intermittent but must be continuous till the crisis had passed. It was dangerous to give it in a crisis and then to interrupt its administration. The physiological reactions brought about by giving oxygen were very complicated. If oxygen was gradually decreased, without increasing the CO_2, from the normal level to the stage of oxygen-want, there was a rise in blood pressure and an increase in respiration rate and volume up to the crisis, when respiration failed and the blood pressure fell rapidly. If, when this crisis was approaching, oxygen was given, the heart-rate, blood pressure, and respiration were restored to normal; but if the oxygen was then stopped the severest stage of the crisis immediately returned. In pneumonia the patient could not stand the shock brought about by withdrawal of oxygen given therapeutically.

The PRESIDENT (Prof. J. A. GUNN) then read a paper on

Expectorants.

He said that in the course of the last decade there had been notable advances in nearly every department of therapeutics, but in one subject—namely, expectorants—not much progress had been made in the last 10, 50, or even 100 years. Hardly any experimental work had been done on expectorants, and only one or two papers had appeared. He had examined text-books from all countries, and had found they contained mostly repetitions from those of 90 years ago when Christison wrote.

One of the difficulties lay in measuring the secretion from the bronchi and the impossibility in patients of separating it from salivary secretion. A physiologist had recently told the speaker that he had taken large doses of ammonium chloride and had been unable to observe any increase of bronchial secretion in himself. But in a normal person it was not easy to observe increase in secretion. On the other hand, in a person with dry bronchial mucous membrane a very slight secretion became immediately noticeable. In animals the difficulty was not so great. Pieces of absorbent paper were placed on the trachea and the secretion measured by weight. Here, however, the experiment was complicated by the anæsthetic, which in itself produced secretion, and by the fact that different animals reacted in different ways and that the secretion was different in normal and pathological conditions. He wished to make an appeal to clinicians to devise some method of measuring bronchial secretion.

Prof. Gunn then referred to the physiological methods of clearing bronchi. There was a motor and a secretory mechanism. The former was rather complicated. Cough only cleared the trachea and upper bronchi. More important was the movement of the cilia. As a student he had thought it a myth, but now he regarded ciliary movement with profound respect. By means of the ciliograph the movement could be measured. A small piece of ciliated epithelium could be made to move quite a large drum. It would propel solid particles at the rate of at least 1 inch a minute. Therefore it took less than half an hour

to move anything from the depth of the bronchi to the upper air passages. A small portion of the bronchi near the alveoli had no cilia. Possibly this was the reason for the occurrence of bronchiolitis. Another possible mechanism for clearing bronchi was peristaltic movement of bronchial muscle.

The classification of expectorants was most unsatisfactory. Hitherto they had been classified either according to the place where they were supposed to act or according to whether they were sedative and stimulative. For the latter classification there was no justification. Prof. Gunn divided them according to whether their modification was: (1) Reflex, through gastric irritation—tartar emetic, ipecacuanha, senega, squill, potassium iodide, alkalies. (2) Central—apomorphine (emetine). (3) Stimulation of secretory vagal endings—pilocarpine. (4) Stimulation of glands during excretion—potassium iodide, ammonium chloride. He then discussed the action of the various drugs in detail. Ipecacuanha acted better in children than in adults, and was valuable in acute diseases possibly because it had a tendency to lower temperature. Probably it got its reputation on account of this. If the doses were pushed till nausea supervened the expectorant effect was much more powerful. This raised the question whether the stimulus went only to the secretory fibres or to the broncho-motor fibres of the vagus as well. Senega acted in the same way as ipecacuanha; there was no reason for regarding it as a stimulant expectorant and ipecacuanha as a sedative. Squill might come into a different category, but it was first used as an emetic, then as an expectorant, and only later was its cardiac action realised. Its effect was explained by reflex action from the stomach. It also had a central emetic action. Probably it had a more prolonged effect than ipecacuanha, but this had not been accurately measured. Physicians in the seventeenth and eighteenth centuries had a great respect for squill, probably because it was given in large doses and had an effect on the heart. Potassium iodide was a very valuable expectorant, especially in the chronic bronchitis of adults. It acted both reflexly from the stomach and directly on the glands of the mucous membrane. Regarding ammonium chloride there was great divergence of opinion. Some text-books said it increased secretion, some that secretion was diminished, and others that secretion was increased in large doses and diminished in small doses. Clinically it acted as an expectorant. Intravenously it had no effect except in very large doses.

Dr. WHITRIDGE DAVIES said that from personal experience he could say that ammonium chloride acted as a gastric irritant.

Prof. F. J. MCDOWALL (London) said that observations with the bronchoscope showed that there was complete closure of the bronchi during expiration; therefore the bottom part of the bronchi would be squeezed clear with each expiration.

Prof. O. S. GIBBS (Halifax, Nova Scotia) asked whether, if the bronchial tree was emptied by peristalsis, the action of adrenalin would not be to prevent this?

Prof. RALPH STOCKMAN (Glasgow) spoke of the observations of Christison. Many drugs could only be studied in disease, and expectorants belonged to this category. It was difficult to study them satisfactorily in animals. The method of taking up expectoration with blotting paper was too crude to be of value. Many patients with bronchitis had a degenerated mucous membrane and in them drugs would have quite a different action.

THURSDAY, JULY 21ST.

This Section met on the second day to discuss the

THERAPEUTIC USES OF CALCIUM SALTS.

Prof. F. R. FRASER (London) said that an understanding of the indications for administering calcium in disease was made more difficult by the fact that calcium was always present in the body. The serum in health contained about 10 mg. per 100 c.cm., and the amount was remarkably constant. This constancy pointed to some mechanism which maintained a balance between absorption, elimination, and deposition. Only a small proportion of ingested calcium was absorbed, and most of it was passed in the fæces. Elimination of absorbed calcium was by excretion into the digestive tract and to a slight extent in the urine. Certain facts concerning the functions of calcium were well established, others were still vague. Calcium was essential for the clotting of blood and for the proper contraction of heart muscle, and was an essential constituent of bone. Low calcium content of the serum was associated with neuromuscular disturbance and tetany. It also played an important part in the balance of ions in the tissues and fluids of the body. A balance between calcium and magnesium ions and between sodium and potassium ions had been demonstrated in normal life, and the part played by calcium in spasmophilia and tetany must be viewed as exercised through this balance of ions as well as by calcium specifically. Balance also existed between acid and basic ions by which pH was kept constant. Further, a balance must exist between the Ca ions and the PO_4 ions and the solubility of the $Ca_3(PO_4)_2$, so that the product of ionic concentration could not rise above a certain level. An increase in the product caused a deposition of solid $Ca_3(PO_4)_2$, and a diminution resulted in the passage of the solid substance from the bones into solution in the body fluids.

The amount of total calcium in the serum was used as an indication of the calcium supply in the living body. It might occur in different states of chemical combination—viz., a non-diffusible fraction combined with protein, a diffusible and easily ionised fraction (about 50–60 per cent. of the total), and an ionised fraction variously estimated as 20–25 per cent. of the total. In considering the significance of departures from the normal values for the calcium content of the serum, it was important to remember that they might affect any of these fractions. Until simple and accurate methods were devised for estimating the available calcium in the blood, its therapeutic uses could not be placed on a satisfactory basis.

Indications for Calcium Therapy.

Nephritis.—The total calcium of the serum was definitely reduced in severe nephritis. In the forms with pronounced œdema there was reduction also in the serum proteins. L. Blum and his co-workers had advocated the administration of calcium chloride for the purpose of diminishing the œdema, and in his hands, and in those of many others, it was proved to be an efficient diuretic in many cases. Its action was not due to a specific action of calcium and the restoration of the serum calcium to a higher level. It would appear that it acted by the change that resulted in the balance of ions in the body fluids, either (Blum) by increasing the calcium ions, thus decreasing the sodium ions, or by releasing the chlorine ions, thus increasing the acidity, and the excretion of sodium as sodium chloride accompanied by large amounts of water. The latter explanation was supported by the similar beneficial action of ammonium chloride or nitrate. In severe cases of azotæmic nephritis the serum calcium was definitely reduced, and this reduction was accompanied by an increase in the inorganic phosphorus of the serum. No clearly beneficial results had been reported in this form of nephritis by the administration of calcium.

Tetany.—Post-operative tetany was specifically due to the low calcium content of the body fluids, and could be relieved by raising the calcium content. The administration of extracts of the parathyroid glands was able to raise the calcium content of the serum and relieve the tetany. The oral administration of calcium salts in excess could raise the level of calcium in the serum and might relieve tetany, and intravenous administration gave prompt but transient relief. In tetany and spasmophilia accompanying rickets the serum calcium was low. The use of parathyroid extract in rickets was contraindicated except as an emergency, since the increased serum calcium was

obtained by the removal of calcium from the bones which were already deficient in it. The administration of calcium salts and cod-liver oil would suffice to raise the calcium in the serum to a normal level, but such measures as exposure of the patient or of the patient's food to sunlight or ultra-violet light might be all that was necessary for the proper treatment of the rickets and the relief of the spasmophilia.

With regard to other conditions, Prof. Fraser said that low values for serum calcium had been reported in various skin diseases, but there was no evidence that deficiency of calcium was of significance in the pathology of the disease, and no clear evidence that raising the calcium influenced the course of the disease. Confirmation of the value of calcium therapy in the many and various diseases associated with chronic infections, as found by H. W. Vines and W. R. Grove, was necessary before the scope of calcium therapy could be accepted as embracing the conditions enumerated by them. It was also difficult to accept the evidence available as proof of the value of internal calcium therapy to control hæmorrhage. Blum had shown a powerful diuretic action of calcium chloride in cardiac œdema. That ammonium chloride acted in a similar manner suggested that it was the acid property of these salts which was responsible for their action as a diuretic, although calcium might have an effect in the same direction by its antagonistic action to sodium. The beneficial therapeutic effects of the use of calcium chloride in different exudates and transudates had been variously reported, but convincing evidence was needed that such beneficial actions were due to calcium.

Prof. Fraser then discussed methods of administering calcium, but concluded that indirect methods of influencing the calcium in the body might be of greater practical importance than the administration of its salts.

Discussion.

Dr. L. G. PARSONS (Birmingham) confined his remarks to the effect of calcium in children. It was not necessary to give calcium salts medicinally in order to produce calcification of bone, because the diet of a young child contained enough calcium to supply the requirements of the body if absorption was normal. He never prescribed calcium salts except in tetany. If ionic calcium in the blood was diminished tetany would occur, but spasmophilic manifestations might appear under certain circumstances with an undiminished blood calcium. Pyloric stenosis in infants furnished examples of this; in some cases convulsions occurred and recurred and proved fatal, or, shortly after the Ramstedt operation, the child showed a period of apnœa followed by deeper breathing and convulsions. The condition was one of alkalosis, and resulted from loss of chloride ions due to repeated vomiting and high intestinal obstruction. In this alkalosis, although the calcium in the serum was normal or higher than normal, the ionic calcium was diminished. On the other hand, in severe azotæmic nephritis, in which the serum calcium might be low, tetany did not occur, because there was an acidosis which resulted in more of the calcium being ionised. The therapeutic problem was chiefly how to maintain the ionic calcium at such a level that the specific effects of low calcium would not occur. Dr. Parsons then referred to the question of calcium concentration in nephritis and cœliac disease. What were the factors concerned in the absorption of calcium from the alimentary tract, and how could absorption be increased? It had been shown that whilst excessive amounts of calcium in the diet tended to increase its total absorption and retention, they impaired phosphorus retention and vice versa. The retention of one element in the intestine by an excessive amount of the other was explained by the formation of insoluble calcium phosphate. To obtain the maximum absorption of both they must be properly balanced in the diet; the calcium should exceed the phosphorus. In children one pint of milk daily would meet this requirement. Another important factor was the presence of fat in the diet. Low calcium retention was found both when there was insufficient fat intake and when large quantities of fat remained unabsorbed in the intestine, as in cœliac disease. The influence of fat on calcium was due to the vitamin D in it. It had been suggested that increased acidity in the upper part of the intestinal tract would increase the absorption of calcium, but this was not entirely borne out by his observations. It appeared that the absorption was not facilitated by the increased acidity per se but by the presence of vitamin D, which itself led indirectly to increased acidity in the intestinal tract.

Mr. C. P. STEWART (Edinburgh) said that Dr. Parsons's clinical observations were borne out by biochemical research. Acidity was a very important factor in the absorption of calcium, at any rate in normal persons. Calcium could only be absorbed after being broken down into Ca ions. If it was given with a protein meal it was ionised by the hydrochloric acid of the stomach and absorbed; if it was given on an empty stomach there was not enough acid and the absorption was poor. If the reaction of the intestine was alkaline, insoluble soaps and calcium carbonate were formed. A distinction had to be made between absorption and retention. Absorption was often normal but the calcium was immediately re-excreted into the large intestine. Retention was associated with vitamin D. Parathyroid hormone was capable of raising serum calcium but it did not increase its absorption. He had obtained the same rise of serum calcium after parathyroid when the whole alimentary canal had been removed from the animal. In further experiments he had isolated and washed out the large intestine and estimated the excretion of calcium after three hours. He then gave parathyroid extract and the same amount of calcium was excreted. It was clear, therefore, that the increased calcium in the serum could only have come from the tissues and ultimately from the bones. Parathyroid was of no therapeutic value in raising absorption but led to depletion of bone calcium. Calcium in the blood was in a partly ionised, partly non-ionised, and partly diffusible form. Our knowledge concerning these forms was vague and it was by no means certain what part ionic calcium played in blood coagulation.

Dr. G. H. PERCIVAL (Edinburgh) said that calcium was intimately associated with cell lipoids. He discussed its action in relation to cell chemistry. Normally there was a very efficient control for keeping calcium constant in the blood. But although symptoms appeared when calcium was diminished, it could be increased by 50 per cent. without any symptoms occurring. During pregnancy and lactation the mother frequently suffered from a deficiency of calcium. A liberal supply of calcium was indicated. Nevertheless, osteomalacia was not affected by giving calcium. In osteitis fibrosa the disease was associated with tumour of the parathyroid. Defence mechanisms were impaired by low blood calcium, but in practice in septic cases the serum calcium was generally normal.

Prof. L. BLUM (Strasbourg) had studied the diuretic action of calcium salts. He showed charts of different cases, the first being one of idiopathic œdema. A salt-free diet with any of the ordinary diuretics had no effect on the condition. If sodium chloride was given the œdema increased. Calcium chloride and calcium lactate produced diuresis and loss of weight, provided that a salt-free diet was maintained. In the presence of sodium chloride, calcium salts had no effect. Calcium chloride was also effective in cases of chronic nephritis with œdema, in the ascites of hepatic cirrhosis, and in inflammatory exudates such as pleural effusion. In the latter there was a fall in temperature during calcium administration. Prof. Blum described a condition which he called dry chloride retention. Essentially, it was an alteration between the balance of sodium, carbon dioxide, and chlorine, and was characterised by a high chloride and low sodium content of the serum. It could be

produced by giving calcium chloride. Its symptoms were dryness of the throat, thirst, and weakness. In this condition it was dangerous to give calcium chloride for then acidosis supervened. To obtain a therapeutic effect it was necessary to give large doses—e.g., 5 to 10 g. Unfortunately, the drug was unpleasant to take and it induced vomiting, diarrhœa, or constipation, but no other calcium salt could replace it.

Dr. G. C. LINDER (London) gave the results of some studies on cases of tetany. Tetany was a syndrome produced by various means. It was associated with deficient parathyroid secretion, and low calcium and high bicarbonate content of the serum. Loeb had been the first to discover that neuromuscular irritability depended on sodium and calcium ions. In tetany the sodium in the serum remained fairly constant, but the calcium altered. After discussing fully the theory of tetany he gave the results of treatment in a number of cases. The charts of a case of postoperative tetany were shown and indicated the difficulties met with in a case which at first sight might have appeared simple.

Dr. N. C. F. BURGESS (London) had studied calcium metabolism in various types of skin disease. He described a method for estimating calcium in the blood, and distinguished between that obtained by analysis of the ash and that estimated by direct precipitation in the serum. Pathological cases fell into two categories: (1) those in which the total calcium was normal but the precipitated calcium was diminished, (2) those in which both were diminished. He criticised the results of Percival and Stewart because they worked only with precipitated calcium. His results confirmed the work of Vines. He analysed 67 cases of skin disease, in many of which, especially those of urticaria and dermographia, the serum calcium was low and calcium therapy was effective.

Dr. C. G. LAMBIE (Edinburgh) gave an account of calcium metabolism in osteitis fibrosa, a disease characterised by rarefaction of the bones and the occurrence in them of giant-celled tumours, and by hypertrophy of the parathyroids. The blood showed hypercalcæmia of 17 per cent., slightly low inorganic phosphorus, normal urea, and chlorides, normal coagulation time, and CO_2 combining power increased by 5 per cent. There was enormous output of calcium in the fæces and a negative calcium balance.

Dr. MYERS spoke of calcium in relation to nephritis.

The PRESIDENT (Prof. J. A. GUNN) asked whether calcium altered the diffusibility of membranes. He cited some experiments of his own in support of the hypothesis that it did.

FRIDAY, JULY 22ND.

The subject of discussion on the third day was

THE ACTION AND USES OF OVARIAN EXTRACTS.

Prof. W. E. DIXON (Cambridge) said that the subject was still sub judice. The ovary, all were agreed, was an organ of internal secretion. If it was removed the animal or human being at once lost its characteristic sex cycle which could be brought back by transplanting a suitable piece of ovary. Twenty-four instances of pregnancy occurring in women after complete removal and retransplantation of ovaries had been reported. The ovarian gland was specific for sex. If it was grafted into a spayed female the œstrus returned and so did the sexual characteristics. In the male, female characteristics appeared, the animals became feminised, and some of the features of œstrus were produced. The growth and function of the ovary was dependent on more than the ovary itself. Something in the body caused the ovary to become active. If a mature ovary was grafted into a young animal it did not function, but if an ovary from a young animal before puberty was grafted into an adult animal it developed and functioned. It could therefore be accepted that the ovary was an organ of internal secretion; the question was how far could that secretion be replaced by artificial extracts?

The ovary differed from other glands because it functioned in a cyclic manner. The corpora lutea underwent stages of development, full functional activity, and regression. Owing to the differences between a degenerate corpus luteum and a growing one extracts of ovary prepared during œstrus and during quiescent periods might give different results. Ovarian therapy had been disappointing for various reasons: (1) the extract might have been taken haphazard from any kind of ovary; (2) physicians gave the extracts in so many different ways; (3) extracts of ovary supposedly containing three different substances were on the market. The first of these substances was œstrin, a definite substance prepared from the ovaries of animals by treating them with lipoid solvents. It had not yet been obtained in pure form, but injected into animals it produced effects leading to œstrus or menstruation (the two were not homologous). It was sold under various names and was prepared principally from the placenta. It was said to be present also in the corpus luteum and was found in the blood of pregnant women after the fifth month and in pregnant animals. Injected into animals it produced development of the sex organs, growth of the uterus, and artificial œstrus. If injected before puberty it was said to lead to œstrus. In order to study the substance and to compare different samples it was necessary to have some method for quantitatively determining its activity. There were three ways of doing this. The vaginal smear method for which rats and mice were used consisted in removing the ovaries, making sure by the examination of vaginal smears that periods of œstrus were no longer occurring, and then injecting the drug and finding the minimal amount which would produce œstrus. The objection to the method was that it was possible to get both positive and negative results with the same sample, and also that the effect was not quite specific for the same result could be got with orchitic extract. The second method was to inject the extract into very young rabbits and watch the development of the uterus. Marked hypertrophy occurred with œstrin. Thirdly, isolated organs showed increase in conductivity of the muscle wave, but many other substances also had this effect. Clinically use of œstrin was indicated when effects leading to menstrual function were required, but so far its use in human beings had not been satisfactory.

The second ovarian substance was obtained from the corpus luteum. In a pregnant animal if the corpus lutea were removed the animal aborted. The experiment was done on rabbits, dogs, and goats in Cambridge, and all but one goat aborted. Afterwards it was shown that one corpus luteum had not been removed from the goat. The injected extract inhibited the period of œstrus; therefore it was the lutein substance which was really responsible for the sexual cycle. So long as the corpus luteum governed the ovary there was no œstrus; when the corpus luteum degenerated the œstrus was released. Persistence of the corpus luteum led to sterility. In support of which view Prof. Dixon quoted Raymond Pearl's experiments on laying fowls; corpus luteum extract was injected into laying fowls and they ceased producing eggs till the injections were stopped.

For the third extract Prof. Dixon was himself responsible. If a watery extract of the ovary was made at certain periods—i.e., in pregnancy, especially just before parturition, and, to a slight extent, during menstruation—its injection was followed by secretion from the posterior lobe of the pituitary body into the cerebro-spinal fluid. Changes in the pituitary gland were closely associated with pregnancy. In a man the organ weighed 0·6 g.; in a nullipara it also weighed 0·6 g.; in a primipara the weight increased to 0·8 g., and the increase was permanent; in a multipara the average weight was 1·1 g. The posterior lobe of the pituitary had a specific effect on the uterus—it provided, in fact, the normal stimulus to contraction of the uterus. This was the most important function of the pituitary, and its secretion could be tested for in the cerebro-spinal fluid. With Prof. F. H. Marshall he had detected it in many experiments in which extracts made from the ovary at these special times

were injected into animals. In human subjects it was found that cerebro-spinal fluid taken from women during Cæsarean section produced labour when injected into other women in whom labour had not yet begun. A pregnant rat or mouse when injected with œstrin aborted up to the fifth day. Large doses were needed to effect this on the fifth day, and after that time no abortion was produced. Pituitrin in the early stages did not produce abortion, but it acted more and more easily as pregnancy went on. Finally, a very small dose was sufficient to start labour. In this way it could be explained why the uterus carried its burden for so many months and then emptied itself.

Miss KATHARINE H. COWARD, D.Sc., spoke on the

Standardisation of Ovarian Extracts.

The method proposed for the assaying of the œstrin-content of ovarian extracts was based, she said, on the œstrus-producing property of that substance. The œstral cycle, recurring generally at five-day intervals in the normal rat or mouse, was inhibited completely when the ovaries were removed. It could be induced in such a rat by the injection of an ovarian extract from apparently any other species of animal. The response to injections varied very widely in different rats, some of them failing to respond to a dose of extract which was as much as ten times the amount effective in other animals.

To obtain a "curve of response," 90 rats were ovariectomised, and each one was given subcutaneous injections of 2·5, 7·5, 12·5, and 17·5 mg. of a particular extract at intervals of 14 days. The result was plotted as percentage response against dose, and gave a flat S-shaped curve. Then a dose of 10 mg. of the same extract was given to each of the 90 animals. The percentage response fell on the theoretically correct place in the curve, which indicated that the extract had not deteriorated in value, nor had the rats become less sensitive. Half the rats were then given 10 mg. of the same extract again subcutaneously, the other half 10 mg. intraperitoneally. There was practically no difference in the percentage response of the two groups. Neither was an injection in three parts more effective than a single injection of the whole amount (10 mg.). About the same time 70 mice were ovariectomised and given exactly similar doses. The curve of response fell exactly on that for the rats.

This result, said Dr. Coward, was very remarkable, and indicated that the dose required was independent of the body-weight of the animal, which is also evident from the results on individual rats. It was also surprising that rats which responded to a certain dose did not always respond to a higher dose. It was proposed to adopt as the unit of œstrin that amount of a preparation which would bring about a response in 50 per cent. of the animals tested, 20 animals being used in a test. By referring the response attending any given injection to the standard curve the bulk that would contain enough œstrin (1 unit) to bring about a 50 per cent. response would be found, and thus the sample could be assayed.

Experimental and Clinical Results.

Mr. A. S. PARKES, D.Sc., had sterilised mice by means of X rays and had destroyed the follicles and the corpora lutea; nevertheless periods continued. Therefore the cycle was not dependent on Graafian follicles or on corpora lutea. Œstrin had originally been isolated from the liquor folliculi, but it was also present in the placenta. In pregnancy the corpus luteum had a definite action, inhibiting ovulation and menstruation. In testing extracts of corpora lutea for inhibition of œstrin it was found that some produced œstrus. Further research had shown that the œstrus-producing substance was only found in the fluid in hollow specimens of cow's corpora lutea which was derived from the liquor folliculi. With regard to Pearl's hens, they had stopped laying because they died, killed by the toxic extract. Experiments for the removal of corpora lutea during pregnancy were vitiated by the shock attending the operation, to which the subsequent abortion might well be due. To avoid this he used mice in which one ovary was sterilised by X rays and the other was sound. At various stages of pregnancy he removed one or other ovary. Animals in whom he had removed the non-sterilised ovary all aborted. The sterilised ovary contained no corpora lutea. Degeneration of the corpus luteum brought on parturition. The corpus luteum was also responsible for the development of the mammary gland. Up to two years ago, however, no extract of corpus luteum had been made which pro duced any action whatever. The œstrus-producing hormone had been available for some years. At least two kinds of cells went to the making of the corpus luteum, so that it probably produced more than one type of secretion. The problem was growing very complicated. They now to all appearance had five types of ovarian secretion: a sex-producing hormone, an œstrus-producing hormone, two produced by the corpus luteum (only one of which was definitely known), and a substance producing parturition.

Dr. W. R. ADDIS (Manchester) spoke of the clinical results of ovarian therapy. He had used ovarian hormone without corpus luteum to induce labour, and had had some gratifying results, but also many disappointing ones. At St. Mary's Hospital, Manchester, he at first had only two successes out of 11 cases, but with improved methods of administration he succeeded in four out of five cases. All of these patients were elderly primiparæ, their average age being 35, and labour was long. He gave on an average 4·5 injections of 1 c.cm. of the extract. Contractions began ten minutes after injection and closely resembled those of the first stage of normal labour—i.e., there was contraction and retraction of the upper segment and relaxation of the lower uterine segment. The first point of interest was that for a long time there was no consciousness of the contractions on the part of the patient. Later she was conscious of contractions, but there was no pain. Pain only began when the presenting part met with obstruction at the cervix, and of course during dilatation of the perineum. This was exactly what happened during labour in animals and in savage races. There was a lack of feeling of tension over the abdomen. On vaginal examination there was absence of marked tension on the fornices during contractions. At first the cervix did not dilate; as soon as it did so the patient became conscious of contractions. Tension must, of course, be present, but was not so great as that usually described. The speaker drew a comparison between normal labour and intestinal movements. Labours induced by ovarian extract approximated to those seen among uncivilised races. He was convinced that the action of ovarian hormone on the uterus was specific and that it worked directly through the autonomic system. Pituitary extract acted directly on the muscle-fibres, and it was difficult to conceive of a substance acting on muscle which would produce the complicated balanced action of labour. His experiments on decerebrate cats in which the pituitary had been removed showed that injection of ovarian extracts produced regular contraction of the uterus.

Dr. THEODORE HAULTAIN (Edinburgh) said that whenever both ovaries were removed he put the patient on ovarian extract made from the whole ovary. He had sent out a questionaire to patients on whom he had operated during the last five years and had received 31 replies. A table compiled from these showed that there had been far fewer complaints of obesity, depression, flushes, headaches, and nervous symptoms among patients who had received ovarian extract. In his experience the results of removal of the ovaries for chronic salpingitis were far worse if the uterus was left than if it was removed with the ovaries.

Dr. KENNEDY remarked that he had collected literature on ovarian medication. It was hard to judge of its efficacy because of the multiplicity of methods adopted and the different preparations of ovaries in all stages of development that were given. He did not agree with Dr. Parkes that there had been no active preparation of corpus luteum until two years ago. Dr. C. J. Hertz had given an extract of it intravenously in pernicious vomiting with very good

results. He himself had produced an extract which he used for experiments on rabbits. The water-soluble extract inhibited ovulation. If ovulation was inhibited for from three to five months atresia of the follicles followed. The œstrus which sometimes occurred after injection of corpus luteum was due to the liquor folliculi often present in cysts in the corpora lutea of cows from which the extract was generally made. If the corpora lutea, when taken out of the body, were chopped up and washed in ice-cold water the œstrin was got rid of. He wished to ask Prof. Dixon about the relation of pancreatic secretion to pituitary and ovarian secretion. When the corpus luteum was removed there was a diminution in the number of islets of Langerhans, and with development of the corpus luteum they increased. The blood-sugar curve ran parallel to the ovulation cycle in birds and probably also in mammals. He asked Dr. Parkes for further details on the cells of the theca and the membrana granulosa in the composition of the corpus luteum, since the type of cell varied in different species of animals.

Dr. CAMPBELL could not help wondering, after listening to the discussion, why the male had dared to develop a posterior lobe to his pituitary. He and Dr. Scott had investigated the question of the action of œstrin with regard to blood-sugar. The injection of œstrin had no effect on blood-sugar whether injected alone or with or before insulin. The watery extract of ovary had also no inhibiting effect on insulin.

Prof. C. W. GREEN said that Dr. E. Allen, working with monkeys in Missouri, had removed one or both ovaries. With the follicular extract he had been able to re-establish menstrual flow in animals deprived of both ovaries. When the follicular fluid was injected there was a considerable growth of the mammary gland, which showed that the corpus luteum had nothing to do with this phenomenon.

Prof. DIXON, in reply, said that Dr. Parkes had made it clear by his experiments that in the mouse the corpus luteum was essential for the continuation of pregnancy. He agreed with Dr. Addis's facts but not with his conclusions. Dr. Addis had in reality described the typical action of pituitary. Its action was to increase the irritability of the uterus, so that the slightest stimulus produced an effect. It was only when doses far in excess of physiological amounts were used that it had a direct action on muscle. Ovarian extract had no action on the autonomic nervous system. In reply to Dr. Campbell he said that all the endocrines worked together, but there was antagonism between pituitary and insulin. The easiest way to get pituitary secretion was to reduce the blood-sugar. He paid tribute to the work of Allen and Doisy, who were the pioneers in the standardisation of ovarian activity.

Prof. D. MURRAY LYON then read a paper on the Action of Digitalis, in which he gave a statistical study of the effects of digitalis in patients with fibrillation, cardiac cases with no fibrillation, and normals, and showed some of the variations of its action in the three classes.

EXHIBITION OF DRUGS, SURGICAL INSTRUMENTS, FOODS, AND APPLIANCES.

IN the last issue of THE LANCET we briefly noticed some of the more important exhibits at the trade exhibition held at Waverley Market Hall from July 18th–22nd. Hospital and Laboratory Equipment, Books, Spas, and Miscellaneous Exhibits are now dealt with.

HOSPITAL AND LABORATORY EQUIPMENT.

[47] Hoskins and Sewell, Ltd. (Bordesley, Birmingham), had a new "Sunderland" bed with the patent castor pad action, worked through the ordinary four legs; a new silent sliding-side-rail cot, a long, narrow cot as used at Alton, a new cot-bassinette with let-down side rails, and a very light, strong "Dudley" road-wheeling ward screen made throughout of welded tube without nuts or screws. Their all-in-one ward locker combines drawer, cupboard, seat, and extending table, and they are the designers of the "Alton" sunshade.—[118] Lawson Tait Bedsteads (Whitfields Bedsteads, Ltd., 109–125, Waterylane, Bordesley, Birmingham) showed the improved cardiac bedstead as made for University College, London, a child's cot with improved wheeling arrangement and drawer, the Lawson Tait head and knee rest bedstead for the Fowler position, the Pearson fracture bedstead, and other hospital apparatus.—[117] Baird and Tatlock (London), Ltd. (14–15, Cross-street, Hatton-garden, E.C.1), showed all kinds of bacteriological and medical apparatus, made in their own factory, especially a new wide-range control incubator, from room temperature to 80° C., and the new Sinclair Mills apparatus for automatically staining slides.—[119] Messrs. Chas. Hearson and Co., Ltd. (Hope Works, 68, Willow-walk, Bermondsey, S.E.1), showed many pieces of apparatus, including a new high power binocular microscope by Reichert, a capillary microscope, an epidiascope, a new dark-field condenser with built-in source of light, a rotary encased rocking microtome with automatic transporter and section conveyor adjustment from 1 to 25 μ, and an optical bench, for transmitted and opaque objects, with cinema attachment. High speed centrifuges with capacities from 10–500 c.cm. buckets and speeds from 3000 to 10,000 r.p.m. were demonstrated.—[90] Ogilvy and Co. (20, Mortimer-street, W.1), agents for E. Leitz, Wetzlar; Couprie, Lyons; and Frank and Heidecke, Brunswick, showed a complete range of research and routine instruments, including new Leitz microscopes, new fine adjustment slides with ball bearings, micro-camera attachments, interchanging mono- and bin-ocular bodies, hæmocytometers, &c.

X Ray and Light and Heat Apparatus.

[74] Philip Creswick (132, Wellington-street, Glasgow) showed various accessories for X ray and ultra-violet light work; a 30 m.a. set by the Solus Electrical Co., comprising high tension and Coolidge filament transformers on an all-metal control table, on a trolley, forming a compact movable set. Other exhibits were a new non-corrodable and solderless filmhanger and a seriascope for duodenal exposures.—[89, 92] The British Hanovia Quartz Lamp Co., Ltd. (Slough, Bucks), showed lamps for ultra-violet therapy. Special models were the Jesionek Quartz lamp for irradiation of several patients at once (suspension types with big double burners, as used by Gauvain and the Finsen Institute, were shown) and the Cemach Photostat, a new form of mounting with beautiful control, for pharyngeal work.—[41] The Dowsing Radiant Heat Co., Ltd. (91/93, Baker-street, W.1), demonstrated all kinds of electrical appliances, drawing special attention to the "Ultradescent," an appliance containing four radiant heat and one "Ultra-vi" lamp, for combining the applications. Ceiling and floor models of the latter were shown and recommended for home use under medical prescription.—[35] The Medical Supply Association (167–185, Gray's Inn-road, W.C.1), in addition to a universal operating table, pneumothorax apparatus, Hawley's new extension apparatus, and a variety of anæsthetic apparatus, were showing a good deal of X ray material, including the "N.P.L." installation for small hospitals and general practitioners; the "Metalix" tube, wherein the rays are generated within a metal cylinder so that it embodies its own protection; and the "Trinity" ultra-violet light apparatus, designed to provide radiations of the carbon arc, tungsten arc, and mercury-vapour burner.—[46] G. E. L. Rowarth (130, George-street, Edinburgh) had as their principal exhibit a 30 milliampere transformer unit and a 20-inch induction coil unit, both manufactured by X Rays Ltd. (London), for which this firm are the sole Scottish agents. The former is

designed to utilise the 30 m.a. self-rectifying Coolidge tube at an equivalent spark-gap of five inches for routine radiography. The latter is a powerful set which can be used with either gas or hot cathode tubes.—[43] Victor X Ray Corporation, Ltd. (Morley House, 314–322, Regent-street, W. 1), showed X ray and ultra-violet apparatus and accessories, notably a new design of portable electro-cardiograph and all types of Coolidge X ray tubes, including the new 100 m.a. radiographic type and the 50 m.a. water-cooled deep therapy tube.—[107] Radiation, Ltd., showed modern hygienic gas grates made by Arden Hill and Co., The Davis Gas Stove Co. Ltd., Fletcher Russell and Co. Ltd., The Richmond Gas Stove and Meter Co. Ltd., Wilson and Mathiesons, Ltd., and John Wright and Co. All these incorporated the "Radiation" patent "Injector-ventilator." The "New World" gas cooker has also the "Regulo" automatic heat controller, which enables food to be cooked without attention. The stand was illustrated by diagrams showing the results of research which is being conducted on the emission of energy at various wave-lengths from gas fires. A demonstration burner was on view. At another stand were shown the Fletcher Russell range of dental appliances.—[68] The Radiocoil Electro Magnetic Blanket and Pad, Ltd. (4, Manchester-street, W. 1), is a means of heating the whole body by electro-magnetism. The wires are lined by quilted satinie and covered with camel-hair fleece. A complete demonstration outfit was recently supplied to University College Hospital.—[98] The Thermal Syndicate, Ltd. (Vitreosil Works, Wallsend-on-Tyne; 3 and 4, Old Pye-street, S.W. 1), showed a selection of transparent vitreosil; chemical and laboratory apparatus; mercury-vapour lamps, &c.

Miscellaneous.

[4] The Inhaling Drug and Apparatus Co., Ltd. (30, Grosvenor-place, S.W. 1), showed, as in previous exhibitions, the Spiess-Drager drug nebulising and inhaling apparatus for producing dry vapour in regulated flow and density.—[32], [67] Aids for the deaf were demonstrated by General Acoustics, Ltd. (77, Wigmore-street, W. 1), and Mr. R. H. Dent (309, Oxford-street, W. 1). The former especially showed their very small "Shellacon" pattern with an earpiece the size of a farthing, the entire apparatus weighing a few ounces only. Also on view were the Multiple Church Acousticon, as used at Wembley, and a testing set with a series of microphones and earpieces to guide practitioners in prescribing. Mr. Dent had developed amidst his wide range of appliances a "button type," the smallest ever made, and a specially disguised microphone in the form of a wrist watch. The "Ardente" stethoscope was again shown.—[57] Short and Mason, Ltd. (Tycos), (Atlantic House, 45–50, Holborn Viaduct, E.C. 1), showed their usual variety of Tycos sphygmomanometers, thermographs, and barographs, and had a most interesting new recording sphygmomanometer giving on a chart a record of the systolic and diastolic pressures. It is all worked from the pressure system, and is provided with a double cuff to cut out oscillations. With it goes a Spirometer to measure the exercise taken between two pressure readings.—[86] Kodak, Ltd. (W.C. 2) gave special prominence to a system of gall-bladder visualisation, opening up a new field for X ray work, and to dental negatives illustrating the "Bite-Wing" system for early detection of inter-proximal cavities.—[2] Fassett and Johnson, Ltd. (86, Clerkenwell-road, E.C. 1), showed a range of articles including dental floss, "Poppy" corn caps; a celluloid vaccination shield with airholes, lead and camphor boil-plasters, Angier's emulsion and Seabury's Gold Cross absorbent cotton. Of particular interest among the varieties of Mead's and zinc oxide plasters was the new "Multiwidth" spool, containing ½ in., ½ in., ¾ in., and 1½ in. tapes on one reel.—[48] Johnson and Johnson (Great Britain), Ltd., of Slough, displayed ligatures and sutures, toilet powder and plasters. Their Zobec sponges are uniform in size, weight, and texture, and their K.Y. lubricating-jelly is a greaseless water-soluble product which will not stain clothing or fog mirrors. "Band Aid" is a neat little antiseptic dressing fastened to a piece of plaster, ready to apply to any minor injury.—[20, 29] The well-known Thermogene Wool and Antiphlogistine were on show.—[54] G. F. Merson, Ltd. (St. John's Hill Works, Edinburgh), claim to be the pioneer manufacturers of sterile catgut and carry the process right from the intestines of freshly killed Scottish sheep to the finished ligature. They drew special attention to their "Mersutures"—eyeless needle sutures for intestinal work, and to "iod-aseptic" preparing spirit for cleansing "sterile-interior" dry catgut.

BOOKS.

[28] William Bryce (Edinburgh) displayed important and recent publications in every department of medical science, and supply the works of all houses in this country, America, and the colonies at the publishers' rates.—[10] Messrs. J. and A. Churchill (7, Great Marlborough-street, W. 1) had a wide range of medical works including the new edition of "Psychological Medicine" (Craig and Beaton); L. A. Parry's "Some Famous Medical Trials"; Romanis and Mitchiner's "The Science and Practice of Surgery," in two volumes; Rowlands and Turner's "Operations of Surgery" 2 volumes; Sequeira's "Diseases of the Skin"; and "Handbook of Ophthalmology," by Neame and Williamson Noble. Of the popular "Recent Advances" series the latest are "Hæmatology" and "Ophthalmology." "The Medical Directory," published by this firm, is in its eighty-fourth year.—[105] The Food Education Society (24, Tufton-street, Westminster, S.W. 1) showed publications on dietetics and hygiene, including "The Diet of Brain Workers" (enlarged) and the old favourites "Facts for Patriots" and "The Pudding Lady's Recipe Book." Graters (for suet, cheese, and winter salads of root vegetables) and "Bickiepegs" for teething babies were also on view.—[106] H. K. Lewis and Co., Ltd. (136, 140, Gower-street, W. 1), included in their extensive display of books and medical stationery "A Manual of General Medical Practice," by W. Stanley Sykes; "Ultra-Violet Rays in General Practice," by W. A. Troup; "X Ray Apparatus," by P. K. Bowes; "Pyelography," by Alex. E. Roche; "Clinical Neurology," by E. A. Strecker and M. K. Meyers; and J. G. de Lint's "Atlas of the History of Medicine, Part I., Anatomy."—[25] The House of E. and S. Livingstone (16, 17, Teviot-place, Edinburgh) drew attention to its most recent publications: Lee's "Diagnosis and Treatment of Venereal Disease"; Muir's "Bacteriological Atlas"; Chapman's "The Heart and its Diseases"; and new editions of Russell's "Ultra-Violet Radiation" and McKendrick and Whittaker's "X Ray Atlas."—[77] Oliver and Boyd (Edinburgh and London) and James Thin (Edinburgh) showed medical and scientific publications, notably Guy's "Pulmonary Tuberculosis"; Dowden's "Fractures"; Eason's "Exophthalmic Goitre"; Thomson's "Sick Children"; and the *Edinburgh Medical Journal*.—[71] The Oxford University Press (Amen House, Warwick-square, E.C. 4) have recently published a fourth edition of Tod's "Diseases of the Ear"; a second edition of Price's "Textbook of the Practice of Medicine"; Wright's "Applied Physiology"; Harris's "Neuritis and Neuralgia"; Wyard's "Diseases of the Stomach"; Sinclair's "The Thomas Splint"; Henderson and Gillespie's "Textbook of Psychiatry"; Thomson and Gordon's "Chronic Rheumatic Diseases"; and D. A. Crow's "Ear, Nose and Throat in General Practice"—just out.—[6] Among the books shown by W. B. Saunders Company, Ltd. (9, Henrietta-street, Covent-garden, W.C. 2), were "Abdominal Operations," by Sir Berkeley Moynihan; "Mayo Clinic—Collected Papers, 1926"; "Clinical Syphilology," by John H. Stokes; "Principles and Practice of Chemotherapy," by John A. Kolmer; "The Specialties in General Practice," by F. W. Palfrey and teachers of the Harvard Medical

School; "Health Supervision and Medical Inspection of Schools," by Thomas D. Wood; "Textbook of Clinical Neurology," by Israel S. Wechsler; "Diseases of Infants and Children," by J. P. Crozer Griffith; and "A Textbook of Medicine by 130 Authors," edited by Russell L. Cecil.—[70] John Smith and Son (Glasgow) Ltd. (26–30, Gibson-street, Hillhead, Glasgow), had on view, among other recent publications in all branches, Jacobi's "Atlas of Dermochromes"; THE LANCET volumes of "Modern Technique in Treatment"; and the Modern Medical Monograph Series, including Langdon Brown on "Endocrines" and a new edition of MacLean on "Renal Disease." They had also a number of early medical works.—[23] John Wright and Sons, Ltd. (Bristol), showed "Diseases of the Nose, Throat and Ear," edited by A. Logan Turner; "Synopsis of Physiology," by A. Rendle Short; "Cystoscopy," by J. B. Macalpine; and many other standard works; also "The Medical Annual" and the *British Journal of Surgery*.—[72] An innovation was the stand of H.M. Stationery Office, where were displayed the publications of the Medical Research Council, the Ministry of Health, and the National Physical Laboratory; also the medical history of the war and ordnance maps.

SPAS AND MISCELLANEOUS.

[3] At the Bath stand there were pictures of the spa and its therapeutic installations, and attention was drawn to the Old Royal Baths, to be opened in September, chiefly for intestinal douching and treatment in the pool.—[7] The Buxton exhibit consisted of photographs, guide books, and samples of the waters. The Corporation has taken over the Buxton gardens to run in connexion with the bathing establishment. The three-guinea-inclusive treatment scheme has been a great success.—[5] The Harrogate spa has many varieties of medicinal waters, under the constant supervision of a permanent scientific officer. Efforts are being made to popularise the sulphur water cure.—[75] The Stanboroughs, London Area Hydro, Watford, had a stand with illustrations of this country estate where treatment of all kinds is provided as at a hydropathic establishment.—[95] Droitwich claims that its unique brine baths are being more and more generally recognised. Accommodation has recently been extended and includes private and swimming baths, douche, needle, vapour, and aeration baths.—[55] Ingram and Royle, Ltd. (45, Belvedere-road, S.E. 1), as sole agents, were displaying samples of water from the three Vichy springs; Carlsbad waters and natural sprudel salt; and Hunyadi János, as well as many other natural mineral waters.—[79] The Hammond Varityper Co., Ltd. (75, Queen Victoria-street, E.C. 4), showed their instrument equipped with medical keyboard and demonstrated its ability to write any language in 360 different kinds of type with variable spacing, and to duplicate or cut stencils without extra effort. A portable model is made.—[111] The Royal Typewriter is also made in standard and portable models with a medical keyboard. Its colour can be selected to match the decoration of the consulting-room. The small pattern weighs 9½ lb. without case.—[66] The Museum Galleries (53, Short's-gardens, Drury-lane, W.C. 2) as usual broke the monotony of the strictly useful with a display of reproductions of old masters and portraits of medical men, including Lister, Simpson, and Harvey. They showed also a mezzotint of Dr. Harvey explaining the circulation to Charles I., directly engraved from the original in the Royal College of Physicians.—[108] Refreshingly unusual was the display by Sedley Rothwell (71, Oxford-street, W. 1) of hand-painted glassware and Italian Gesso work. The designs were exclusive and the paint would not chip or be damaged by hot water.—[113, 37] The Medical Sickness, Annuity and Life Assurance Society, Ltd. (300, High Holborn, W.C. 1), and The Medical Insurance Agency (B.M.A. House, Tavistock-square, W. 1) had their usual stands.

Reviews and Notices of Books.

INFECTIOUS DISEASES.

Ker's Manual of Fevers. Third edition. Revised by CLAUDE RUNDLE, O.B.E., M.D. Lond., M.R.C.S. Eng., L.R.C.P. Lond., D.P.H., Medical Superintendent, City Hospitals and Sanatorium, Fazakerley, Liverpool, and Lecturer on Infectious Diseases to the University of Liverpool. London: Humphrey Milford, Oxford University Press. 1927. Pp. 346. 12*s.* 6*d.*

THIS well-known manual of fevers, by Dr. Ker, of Edinburgh, was first published in 1911 and reissued in 1922. The present edition has been revised by Dr. Claude Rundle, of Fazakerley, who states in the preface that he has endeavoured to incorporate the results of recent research, keeping in mind the double purpose of the late Dr. Claude B. Ker—that is, to instruct students and to help practitioners. Dr. Ker was known to a generation of students as one of the greatest teachers of infectious diseases in this country and his gifts of clear exposition were well shown in this manual and in his larger work. Dr. Rundle has revised many chapters so as to include the recent work on scarlet fever, diphtheria, and measles. We note that a slight alteration in the antitoxin dosage is recommended, Dr. Rundle advising somewhat larger doses of diphtheria antitoxin than those formerly used. Dr. Ker was one of the pioneers in this country in the matter of the Schick test, and it is to the stimulus supplied by him that the success of immunisation against diphtheria among the school-children of Edinburgh is due. It is fitting, therefore, that this manual should continue to live as a faithful monument of his work.

Diphtheria, Measles, Scarlatina. Second edition. By FRANK V. G. SCOLES, M.D., B.S. Melb., D.P.H. Camb., Medical Superintendent, Melbourne Infectious Diseases Hospital. Melbourne: William Ramsay. 1927. Pp. 321. 21*s.*

THE first edition of this book appeared in 1919 and consisted of a number of lectures, slightly amplified and presented in book form. The present edition has been thoroughly revised and brought up to date. The book is mainly a record of personal opinions and contains much useful information. The author is a keen observer and has sound views on the treatment of these infectious diseases. He includes many useful tables, notably the scheme of antitoxin dosage in diphtheria; while the treatment of laryngeal diphtheria by intubation is admirably discussed. Recent researches on diphtheria and scarlet fever are fully described. There are no plates and no temperature charts, which would have been acceptable, but the book is, on the whole, well written, and should prove of great value to the senior student and the practitioner.

DISEASES OF THE EAR IN CHILDHOOD.

Die Ohrenkrankheiten im Kindesalter. Second edition. By Dr. GUSTAV ALEXANDER, Professor of Otology in the University of Vienna. Leipzig: F. C. W. Vogel. 1927. Pp. 399. M.39.

THIS work first appeared in 1911. The second edition has been considerably enlarged; several sections have been revised, including those on the deaf child and the aural complications of general diseases, and a certain amount of new matter has been introduced, such as the descriptions of latent otitis, mastoidismus, and otitis interna vasomotoria. By the term mastoidismus Prof. Alexander means the symptoms of involvement of the mastoid in the first few days of an acute suppurative otitis, which symptoms retrogress and disappear by the end of the first week. In his view the pus which would be found in the mastoid cells at this stage has flowed into them from the antrum owing to the position of the head, without the cells

themselves participating in the inflammation. It is, however, equally reasonable to assume that the mastoid cells are inflamed, together with the rest of the auditory tract, in the early stage of an acute otitis, but that they often tend to recover under the influence of good natural drainage; it is unlikely that the mastoid would be painful and tender if it were merely the repository of pus from elsewhere. Of the peculiarities of the ear of infants Prof. Alexander rightly lays stress on the thick and resistant ear-drum of young children, whereby an acute otitis may persist for one or two weeks without perforation. This factor, together with the short and wide Eustachian tube, makes latent otitis far commoner in children than in adults. The infantile characters of the membrane, the wide Eustachian tube, shallow tympanum, and limited pneumatisation are the anatomical basis of the susceptibility to inflammation of the middle ear of childhood. Of the effect of this last factor he gives the following example. Suppose, as a result of disturbance of function of the Eustachian tube, that 1 c.cm. of air is absorbed, if with full development of the cells the entire content be 6 c.cm., the pressure is only reduced by some 17 per cent.; but if with deficient pneumatisation the total capacity be only 2 c.cm., the pressure is reduced by 50 per cent. and a serious degree of negative pressure results. This argument is surely unsound, for, with numerous air-cells, there must be a large surface for absorption. For paracentesis he advises local anæsthesia by means of instillation of a 20 per cent. watery solution of novocain or alypin; in our experience this produces little or no anæsthesia in an inflamed drum, and in this country a general anæsthetic is almost universally preferred. The same tendency is shown in the recommendation of local anæsthesia for the removal of adenoids; the removal of the faucial tonsils is not described, though very often necessary in the treatment of aural disease.

Much of the ground covered by this book is necessarily the same as that of any work on otology, for ear diseases of children only differ in certain respects from those of adults; the chapters on congenital syphilis, tuberculosis, and on the aural complications of the specific fevers are of special interest, and are well and clearly written. The illustrations are good, especially the plates of anatomical drawings, and the work as a whole is well arranged and likely to be useful to all interested in children's ear diseases—that is, to all otologists.

MALARIA.

Its Investigation and Control, with Special Reference to Indian Conditions. By ROBERT KNOWLES, Major, I.M.S., Professor of Protozoology, Calcutta School of Tropical Medicine; and RONALD SENIOR-WHITE, Malaria Research Officer. Calcutta: Thacker Spink and Co. 1927. Pp. 220. Rs.78.

THE activities of the Calcutta School of Tropical Medicine are not merely confined to research, but find outlet from time to time in the issue of useful volumes. The dedication "With respectful homage to the wives of research workers in recognition of their sufferings in the cause of Science" is not to be taken as an index that the subject matter is handled flippantly. On the contrary, the book is packed full of information of the kind most valuable to the medical officer entrusted with civic or rural sanitation in India. It is informative, too, on subjects which are not adequately summarised in a convenient space in any other standard work. The book is divided into six chapters, of which the first three deal with parasitology and microscopic diagnosis; much of this information, as is freely acknowledged, is based upon Wenyon's work. In subsequent chapters the treatment of malaria, the carrying out of a malaria survey, and the design, maintenance, and construction of anti-malaria measures are dealt with in a practical way. Appendices, among the most useful features of the book, include notes on breeding-places and distribution of Indian anophelines, illustrated with outline text-figures of venation, markings, and larval characteristics. A note on technical specification for underground drainage and a useful bibliography complete the work.

The sections on the blood changes in malaria, methods of artificial culture of plasmodia, the measurements of the splenic index, and Sinton's alkaline quinine treatment are specially to be commended. The volume is well illustrated; the five plates of malaria parasites and blood cells are a trifle over-coloured, but this is a minor blemish.

THE NORMAL THYMUS.

Die Menschenthymus in Gesundheit und Krankheit. Vol. I. *Das normale Organ.* Second edition. By J. A. HAMMAR. Leipzig: Akademische Verlagsgesellschaft, M.B.H. 1926. Pp. 570. M.81.

THIS volume contains a detailed account of the author's own work. The greater part of the book is taken up with a detailed description, together with drawings to scale, of the numerous types of thymus gland, human and animal, fœtal and adult, that he has examined. The most interesting chapter of the book deals with status lumphaticus. The author maintains that the diagnosis of this condition depends not on the gross size or weight of the organ, but on the relative proportion of cortex and medulla. He complains that in the recorded cases of thymus death notice is only taken of the gross weight of the organ, and no account is given of the microscopical appearance. The literature is extensively reviewed. This book will be of interest to those attempting to study the curious phenomena said to be associated with the enlarged thymus.

THE LIFE OF THE SPIDER.

By J. HENRI FABRE. Translated by A. T. DE MATTOS. With a preface by MAURICE MAETERLINCK. London: Hodder and Stoughton. Pp. 288. 2*s.* 6*d.*

No one reads Fabre with indifference. To some people he is the most wonderful naturalist there ever was, and they read what M. Maeterlinck calls "the most extraordinary of tragic fairy tales" with a glowing enthusiasm. Others find him wearisome, and are irritated by his open contempt for any method of searching for the truths of biology other than his own. In any case, there is here provided an admirably cheap and well-printed edition of one of his best known collections which is convenient for the pocket and so for reading in the proper place—that is, out of doors.

TELEPATHY.

The Sixth Sense. By JOSEPH SINEL. With a Foreword by MACLEOD YEARSLEY, F.R.C.S. London: T. Werner Laurie. 1927. With three plates. Pp. 180. 6*s.*

THE author has for many years been interested in what are generally called "supernormal" phenomena, and he has been roused to put some of his experiences and convictions on paper by what he thinks is the quite unjustified scepticism which prevails pretty widely about the honesty of the facts. His most interesting data are a long series of experiments, spread over a number of years, in which he drew rough diagrams and pictures in secret which the other party, with no possibility of seeing the originals, reproduced with singular fidelity. The greater part of this might be simple telepathy, which he treats very shortly as a common fact of experience. But in some instances the form rather than the meaning was reproduced—e.g., a sketch of a nursemaid being led by a puppy on a string reappeared as a nursemaid wheeling a go-cart. From this sort of occurrence he concludes that not only the human brain but all matter gives off rays which can be perceived, without the intervention of any of the ordinary senses, by anyone who has the faculty of adjusting their mind to receive them. His arguments

for the existence of this clairvoyance are not altogether convincing; it is difficult, perhaps impossible, to be sure that telepathy is completely excluded. And his identification of the pineal body as part of the apparatus concerned is no more than an act of piety in memory of Descartes. We have more sympathy with his thesis that there is no need to invoke the existence of a spirit world to explain the phenomena: the other world to Mr. Sinel is here and now. He notes too briefly that telepathy and clairvoyance play a much larger part in animal than in human life: a more ample treatment of this side of the question would have been welcome from one whose accomplishments as a practical biologist were shown in the admirable "Natural History of our Shores" published about 20 years ago.

ORGANIC CHEMICAL ANALYSIS.

A Student's Manual. Reissue with Appendix on New Methods of Organic Analysis. By JOCELYN FIELD THORPE, C.B.E., F.R.S., Professor of Organic Chemistry, Imperial College of Science; and MARTHA ANNIE WHITELEY, O.B.E., D.Sc., Assistant Professor. London: Longmans, Green and Co., Ltd. 1926. Pp. 250. 9s.

THIS manual is a reissue of the book previously reviewed in our columns, with the addition of an appendix on New Methods of Organic Analysis by H. Ter Meulen and J. Heslinga. The incorporation, without any comment, of the work of these two Dutch chemists is a little surprising; the methods described have only been evolved during the last three or four years, and it is to be regretted that the authors do not bring forward any evidence of having tried these new methods themselves before recommending them to others.

THE SEX GLANDS.

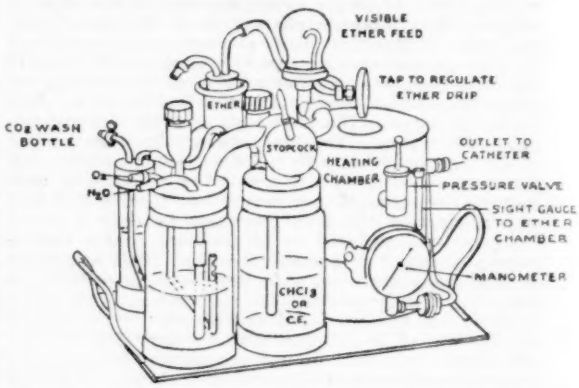
Die Wirkungsweise abgestufter Keimdrüsenschädigung. By Dr. H. V. KLEIN. Berlin: Urban and Schwarzenberg. 1927. Pp. 128. M.12.

THIS monograph contains a detailed review of the literature on the function of the sex glands and a very complete bibliography. The author also describes a number of experiments of his own on rabbits and guinea-pigs. The experiments can be divided into two main groups: (1) quantitative operations, such as castration and partial castration; and (2) qualitative operations, such as autoplastic transplantation, ligature, section or resection of the vasa, radium or X ray radiation, effects of heat and cold, effects of drugs and poisons, and temporary sterilisation with the cautery. Many of Dr. Klein's results are well in accord with those of other observers, but in certain points he differs from them. He finds that increase in weight and tissue-fat is not an invariable accompaniment of castration in the male, and even less so in the female. His quantitative partial castration experiments were inconclusive. In his autoplastic transplantation experiments in adolescent guinea-pigs an interesting finding was a remarkably rapid development of somatic and psychical sex phenomena. The animals were, of course, sterile, but, even after 12 months, evidence of development and maturation of sperm cells was obtained; but an increase in interstitial cells was not a constant finding. The endocrine effect in autoplastic transplantation rarely lasts more than a year in the male, but in the female the endocrine function appeared to last longer after transplantation than in the male. Much the same effect in the male was obtained by ligature of the vasa. In his X ray radiation experiments the author was unable to reach a dose which could in any sense cause a true "Rontgen castration." He found that radiating the ovaries of an immature rabbit led to destruction of part of the follicular apparatus; but the remainder became more active than before, and brought on premature sexual maturity. The interstitial cells were found to be more resistant to X rays than the glandular elements.

New Inventions.

IMPROVED ANÆSTHETIC APPARATUS.

THE illustration represents the fusion into one composite unit of an endotracheal ether insufflation apparatus and a nitrous-oxide and oxygen apparatus, both of which have been already described in THE LANCET (1921, i., 918: 1923, ii., 228). The essential features of each have been retained with slight modifications as follows: (1) The unit is mounted upon a metal base, 9 inches by 6 inches, and



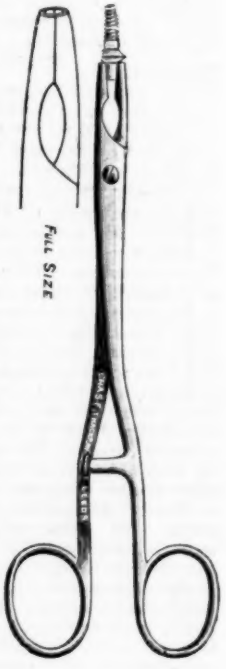
can be carried in a bag without being dismantled. (2) The mechanical safety-valve and manometer are now fitted directly on the heating chamber. (3) The ether drop-feed has been altered to the shape of a dome which can be easily seen from any angle. (4) A water sight-feed has been included for the administration of carbon dioxide.

The makers are Messrs. Down Bros., Ltd., St. Thomas's-street, S.E. 1.

I. W. MAGILL, M.B., B.Ch., B.A.O. Belf.

A SCREWDRIVER FOR OX BONE PLATES.

Cunningham's ox bone plates fixed with bone screws are now largely supplanting metal plates in the operative treatment of fractures. The insertion of a bone screw differs in several respects from that of a metal screw, the former requiring more finesse of technique. After the bone has been bored with a drill, the resulting cavity is "tapped." It is then ready for the reception of the bone screw. For the purpose of inserting the bone screw I have found the forceps-screwdriver of the greatest possible assistance. The readiness with which this instrument can be disengaged prevents the disappointment caused by the thread of the screw becoming broken in endeavouring to release the ordinary screw holder.



The instrument is made by Messrs. Thackray, of Leeds.

HAMILTON BAILEY,
F.R.C.S. Eng.

THE LANCET.

LONDON: SATURDAY, AUGUST 20, 1927.

THE METROPOLITAN ASYLUMS BOARD.

THE Metropolitan Asylums Board, which has just issued an annual report [1] for the twenty-ninth year in succession, may be regarded from the medical standpoint as a coördinated group of special hospitals; a very large group, it is true, for the capital outlay shown in the financial statement up to the end of March, 1926, is given as over £7,500,000. The hospitals, as should be well known by this time, include not only 15 institutions for infectious diseases, but ten others for tuberculosis, six for non-dangerous forms of mental failure, five for sick and convalescent children, and one for venereal diseases. The funds for running these very large and efficient hospitals which serve an area covering 121 square miles, with a population of over 4,500,000, are raised principally from a levy on the rateable value of the area, which is pooled so as not to press unduly on the poorer parishes and unions; to take an example, the rate is levied on a value of £8,000,000 in the City of London, which has only an estimated population of 13,000 to make use of the hospitals, while in Wandsworth, which has a rateable value of under £4,000,000, there are over 500,000 persons who stand to benefit thereby. Some indication of the return obtained for the money may be gained from the statement that the treatment of fever uses up a rate of nearly 4*d.* in the £, tuberculosis and children each another penny, and the care of imbeciles and feeble-minded persons just over 3*d.* The Board's record of central efficiency and economy, along with liberty for advance and healthy rivalry among its several units, is worth the attention of those who are sweeping away the Poor-law and all its works. Etymologically it is interesting to see the survival of the term "asylums" as a description of institutions none of which deals with acute or dangerous mental disease, and it may not be too much to hope that the beneficent and universally popular work of the Board may succeed in redeeming the term from the stigma of its association with hardship and restraint.

The development of the medical work has gone on uninterruptedly since the Board was established under the Metropolitan Poor Act of 1867, when the classes eligible for admission were limited to harmless Poor-law imbeciles and Poor-law cases of scarlet, enteric, and typhus fevers and small-pox. Sixteen years later the civil disabilities attached to admission to the Board's hospitals were removed and year by year new categories of physical and mental diseases were added to the eligible list. The year under review is notable for the highest number of whooping-cough cases ever under the care of the Board at one time since their admission began in 1910. On March 15th last 789 beds were occupied by cases of whooping-cough of a character severe enough to make hospitalisation desirable, the justification for this allocation being shown by the level of the case-mortality in hospital of this so-called trivial childish affection, which has rarely sunk below 10 per cent.; whereas the percentage case-mortality from scarlet fever has steadily fallen from 12·6 in the 'eighties to less than 2 during the last ten years, and has actually been only 0·8 in the year under review. Approval has now finally been given to the limitation of beds for scarlet fever cases, to make room for severe cases of measles and other infectious diseases of childhood when accommodation is insufficient for all. Acting on the consensus of the metropolitan medical officers of health, the Board will continue to admit cases of scarlet fever and measles on practitioners' certificates as now, without reference to the medical officer of health, until such time as any shortage of beds is imminent. Should this occur, applications from practitioners are to be referred to the health office, when the selection of cases for admission will be based on type of home rather than on type of disease, priority being given to cases of measles in tenement houses where there are no facilities for home nursing, or in houses connected with shops, or where a member of the family is employed in the handling of food. These arrangements will require some extension in the facilities for isolation at the infectious hospitals, and on the advice of Dr. F. F. CAIGER, the retiring chief medical officer of the Infectious Hospital Service, the isolation accommodation in the acute hospitals is to comprise one-third of the total beds. Dr. F. H. THOMSON, the new chief, issues a word of warning against regarding the present benignity of scarlatina as permanent. The behaviour of this disease during recent years is not unlike what has happened in the past. It behoves us, he writes, to be on our guard and to perfect its treatment by antitoxin in every way we can, lest we be caught napping.

Change is also going on in the accommodation at the mental hospitals. An undertaking given by the Board to the London County Council to reserve 30 beds per month for suitable mental defectives has resulted in the exclusion of cases from outside the metropolis, although as a matter of fact the demand on the part of the County Council has been less than was arranged for. In general the admission of children to these hospitals continues to fall off, for the County Council now has its own special schools, and only after leaving these does institutional care become essential. Applicants for admission are therefore now generally young adults, and again it may be emphasised that these hospitals are designed for patients of harmless type, not for those who have come under the notice of the police. At the Darenth Colony the attempt to make these young people content with their new existence is successful with all except the most restless of the high-grade defectives. The facilities for schooling, for various kinds of manual occupation, and for the utilisation of free time by guide and scout activities, as well as more conventional forms of entertainment, fill up the day so pleasantly that parents, it is hoped, will come to regard the period of treatment no longer as a period of punishment. The mental hospitals, however, have to face a difficulty in the shortage of nursing, for although there is no general shortage of new probationers in the fever hospitals and no lack of male mental nurses, the supply of suitable female candidates for nursing is inadequate at three out of the five mental hospitals. The report suggests that the remedy lies in the acquisition of a reputation for giving an efficient training and for attention to the personal comfort which compensates the nurse for the restrictions inseparable from hospital life.

[1] To be obtained from the Clerk to the Board, Victoria Embankment, London, E.C.4. 5*s*.

SUMMER DIARRHŒA.

THE problem of summer diarrhœa at one time perforce exercised the minds of all urban practitioners and medical officers of health, for the disease was often a calamity. Year by year, whenever the summer was hot and especially when it was hot and dry, there was a heavy toll of deaths, levied almost entirely on young children. The last great epidemic, however, was in 1911—a year in which the summer was hot and dry almost without precedent—and since then the incidence has rapidly diminished, becoming, indeed, comparatively negligible. In the first week of the present month only seven deaths were registered in London as due to diarrhœa and enteritis under 2 years. Considerable speculation centres round the reasons for this decline.

The belief that summer diarrhœa is an infective disease spread under certain climatic conditions led at one time to diligent search for the bacterial cause. The results were rather surprising, for in America *Bacterium dysenteriæ* was isolated in many cases, in France *Bacillus proteus* was advanced as the cause (though the evidence was very incomplete), in Germany other bacilli were found, whilst the careful work of MORGAN suggested that Morgan's bacillus was responsible in at least a considerable number of cases in English outbreaks. These conflicting results have thrown doubt upon the conception of summer diarrhœa as a disease with a single bacteriological cause in any way comparable with dysentery or enteric fever; indeed, there is some divergence of opinion whether it is a definite clinical entity. Of recent years considerable evidence has been put forward in favour of the view that the condition is of nutritional origin. According to this theory the prevailing ætiological factor is bad feeding, as a result of which diarrhœa and dyspepsia develop under the circumstances produced by a considerable rise in temperature. The immediate cause may be infection with bacteria already present in the intestinal tract or may possibly be chemical and fermentative disturbance. Many exponents of the widely held infective theory consider that flies play a conspicuous part, and the striking decline has been ascribed to the replacement of horse by motor traffic and the resultant diminution of centres of infection. Others ascribe much of the decline to improvements in the milk-supply and to the care of milk in the home.

The impartial student must admit that none of the theories fits all the facts, and we welcome a recent paper[1] by Dr. G. S. WILSON which attacks the problem from a different point of view. He describes two epidemics among mice that were closely associated with Morgan's No. 1. bacillus. In both of these epidemics the mice, which were fed on oats and raw beef, were found at autopsy to be suffering from peculiar lesions—an advanced degree of anæmia, pale and swollen kidneys, and general pallor and dryness of the tissues—not hitherto encountered in any other mouse epidemic. In other series of experiments the mortality from infection by Morgan's bacillus was much higher (12·9 to 1·9 per cent.) among meat-fed mice than among the controls. Dr. WILSON throws no light upon the factors which enable Morgan's bacillus to spread in epidemics among mice, and his attempts to infect mice by feeding them on cultures of this organism were ineffective. It appears that the bacillus can give rise to infection only in the presence of some predisposing factor, and it is possible that this factor may be dietetic. Summer diarrhœa in infants may be due to non-lactose-fermenting bacilli which are enabled to multiply and transfer themselves from case to case under certain conditions of which high temperature seems to be one of the most important.

[1] Jour. of Hyg., 1927, xxvi., 170.

MENTAL DISEASE IN THE LABORATORY.

THE awakening of interest in the physical pathology of mental disease marked a great step forward. Formerly, insanity was regarded as a psychological or spiritual anomaly, and the attempt to approach its mysteries through the study of the body was a sign of emancipation from fatalism. The spread of this movement has been rapid, and it has steadily coöpted neurologists, endocrinologists, and biochemists into its ranks. There has, in fact, even been a danger of a general drift away from the study of morbid pathology, as Dr. EDWIN GOODALL remarked in his Maudsley Lecture on May 19th.[1] He expressed the hope, however, that the active interest shown by so many workers in normal brain histology would save the morbid side from serious neglect, and was, indeed, able to give several convincing examples of progress made in recent years. His survey of the fields of endocrinology, serology, and bacteriology shows how actively these are cultivated, but the most remarkable strides of recent years have undoubtedly been made in biochemistry. Prior to 1904, he said, he could recollect no outstanding communication from a chemist in the realm of psychiatry, but in that year appeared "Some Metabolism Studies, with special reference to Mental Disorders"[2] by FOLIN and SCHAFFER. This work led to the conclusion that general paralysis of the insane might be associated with metabolic disorder, and that different abnormalities of metabolism occurred frequently in all types of mental patients, but pointed to the need for more accurate analytical method before any definite coincidences could be proved. This was the borderland between pure chemistry and the much more complex and elusive biochemistry. Only those, says the lecturer, who have been in touch with biochemical investigation can appreciate the amount of spade-work that was necessary to evolve accurate methods, without which research could not begin. If biochemistry is to be really effective, its exponents must work in close association with the physiologists and biologists and with the clinicians and pathologists.

Here a good example is epilepsy. In our last issue (p. 325) the biochemical investigations of epilepsy were well summarised by Dr. S. H. G. ROBINSON, Dr. RUSSELL BRAIN, and Mr. H. D. KAY, who drew attention to the association of low blood cholesterol with the occurrence of fits. Dr. GOODALL points out that the assumption that hypoglycæmia precedes a fit has not been confirmed. Large doses of glucose did not affect the incidence of the fits in a series of epileptics. Nor is alkalosis a forerunner of the paroxysm, for dogs with epileptogenic lesions of the Rolandic area do not suffer from fits when the alkalinity of their blood is artificially raised to pH 7·50. The blood-sugar content of the blood of an epileptic does not tend to alter consistently either before, during, or after the fit; but the cerebro-spinal

[1] The Eighth Maudsley Lecture: Dealing with some of the work done to elucidate the pathology of disease falling to be considered under the rubric "Insanity," Journal of Mental Science, July, 1927. The Maudsley Lecturer for 1928 is Sir John Macpherson.

[2] American Journal of Insanity, lx., lxi., 1903–1905.

sugar is generally higher than that of the normal subject, and is raised slightly during a fit. General paralytics, on the other hand, usually have a lower cerebro-spinal sugar content than normal; this may be due to faulty functioning of the choroid plexus or gland. Much work has been done on the function of the choroid plexus with its cellular lining, which seems to be part of the "barrier" protecting the nervous system from the blood stream. In the latter part of 1924, WALTER discovered a method of testing the degree of permeability of this barrier, by giving sodium bromide for three days and comparing the amount of bromide in the serum with that in the spinal fluid by a colour test. The result of this comparison is expressed in the form of a permeability quotient (P.Q.), which in the normal person varies between 2·90 and 3·30. WALTER and HAUPTMANN have suggested that the P.Q. is high in schizophrenes and low in those suffering from functional or symptomatic psychoses. BÜCHLER found the diminished permeability of the screen more marked in younger schizophrenes. Dr. GOODALL, however, finds that this test will not serve as a means of diagnosis between the two conditions. KANT observes a connexion between increased permeability (a low P.Q.) and lability of the plasma colloid, and between a high P.Q. and a stability of the plasma. The permeability in general paralysis is high. A valuable discovery was that of the low sugar tolerance of most early and chronic mental patients, especially those suffering from melancholia and stupor. The fasting level is normal, but the glucose meal leads to a sustained hyperglycæmia. Dr. GOODALL considers that this may very likely be due to lability of the vegetative nervous system. In the normal person, stimulation of this system leads to glycogenolysis through a greater activity of the gastric mucosa; in vagotonic patients it leads to a storage of liver glycogen. The lecturer also described the vast amount of careful work done on the calcium and phosphorus contents of the body in various abnormal mental conditions, and the proportion of the various nitrogenous constituents of the plasma and cerebro-spinal fluid. The studies in the Acid Base Equilibrium in Psychoses carried out by Dr. ISABELLA ROBERTSON (THE LANCET, August 13th, p. 322) while working at the Maudsley Hospital are typical of the kind of work which should lead us to a better understanding of the relation of physical to mental abnormalities.

Psychiatry has passed through a superstitious phase and a materialistic phase. It is now in the fresh vigour of adolescence, and is undergoing sharp conflict between the claims of the speculative psychologists and those who seek to approach it from the physical side, of which the exponents are the biochemical team. Happily, the balance is held by a large number of far-sighted and able workers who possess the application of the biochemists together with the vision of the analysts. The day may not be far off when the conflict will be resolved, and both sides will work together to solve the deepest mystery of medical science—that of human personality. Such debates as were held during the joint session of the Neurological and Psychiatric Sections of the British Medical Association and the Royal Medico-Psychological Association form a good example of deliberate attack upon the problem.

NETHERLANDS INDUSTRIAL EXHIBITION. — This exhibition, to be held at Rotterdam from June 1st to Sept. 15th, 1928, will contain a section on industrial welfare and psychology and occupational diseases. Exhibitors in this section should apply to Dr. J. Sanders, Heemradssingel 240, Rotterdam.

Annotations.

"Ne quid nimis."

THE SEASONAL DISTRIBUTION OF MORTALITY.

WE have already called attention to some of the many points of interest in the Registrar-General's statistical review of England and Wales for 1925.[1] In our last issue appeared a note on the geographical study of mortality from respiratory disease. In past years the Registrar-General has published in his annual report some data concerning the seasonal incidence of the chief zymotic diseases based upon the death returns of London since 1841. In his most recent report appears a more ambitious and very important statement of the seasonal incidence of mortality from a large number of diseases, in regard to which improved accuracy has been secured by tabulating according to the date of death instead of the date of registration and by fusing the experience of the whole of England and Wales for the years 1921–25. The first curve given in the report deals with total mortality, and shows a maximum in February and a minimum in August. Its most remarkable feature is the disappearance of the former August rise, which was due to diarrhœal mortality. The standardised death-rate from diarrhœa fell by 27 per cent. between 1901–10 and 1911–20, and by 45 per cent. between 1911–20 and 1925. This important change to a single swing of mortality brings England into line with the general experience characteristic of Northern Europe; when the subsidiary summer elevation occurred England's experience resembled that of the middle and southern sections of Europe. The death curve follows fairly closely that of air temperature, and respiratory diseases are the dominant influence in bringing about the general effect. Some of the changes which are shown to have occurred in the seasonal incidence of infectious diseases have great epidemiological interest. The maximum of incidence of typhoid fever has shifted from November to October. Measles has ceased to have a double peak of mortality, and a special diagram shows the stages of the transition, as the result of which the December peak has disappeared and the June peak is replaced by one in April. Local variations in seasonal incidence of measles mortality were noted by the Registrar-General in 1884, and Prinzing records a remarkable change in the seasonal behaviour of measles in Hamburg during the nineteenth century comparable with that noted for London in the twentieth. Scarlet fever again has shifted its minimum from March and April to August and September, and its maximum from October and November to January. An interesting subject for speculation and still more for investigation is opened out by this change from the autumnal elevation, characterising typhoid fever and poliomyelitis, which has taken place in scarlet fever, and it may be added in diphtheria. A similar remark applies to measles. General interest attaches to the suggestions that the seasonal incidence in the mortality of gastric and duodenal ulcer and of heart disease—characterised by a marked excess at Christmas—may not impossibly be due to the excitement and over-indulgence in food which often occur at this season.

STUDIES IN SCARLATINA.

THE impulse which the recent work of the Dicks has given to research in scarlatina is reflected in the medical journals, and some exceptionally interesting developments are to be found in the current number of *Acta Pædiatrica* (Vol. VI., Fasc. 3–4) which contains three separate papers on scarlatina. In one of them, Dr. Malmberg and Dr. Jacobsohn, of the

[1] The first instalment of the Statistical Review for 1926 has now appeared (H.M. Stationery Office, 15s.). This contains Tables, Part I., Medical, without commentary.

Karolinska Institute of Stockholm, give an account of investigations with the Dick test in 1200 children attending hospital up to the age of 15. In infants of only six months the reaction was positive only in 16·4 per cent. This percentage had risen to 48·8 in infants between 6 and 12 months old, and the greatest proportion of positive reactions was observed between the first and fifth years. Thus between the years of 3 and 4 the percentage of positive reactions was 80·9. After the age of 6 there was a decline in the frequency of the positive reactions, the decline being at first slow and later more rapid. The supposition, credited to the Dicks, that persons who have had scarlatina give a negative cuti-reaction was not confirmed, at any rate as a generality. For among 802 children giving a positive reaction there were eight with a record of scarlatina. Among the 290 who gave a negative reaction there were 60, or 20·7 per cent., who had had scarlatina. Whether this negative reaction indicated a natural immunity or one acquired by an unnoticed abortive form of scarlatina is not clear. The consistency with which the reactions remained positive or negative when repeated once or oftener was investigated in many cases, and of 203 children giving a positive reaction on the first occasion as many as 190 did so on repetition of the test; only in two of these cases was the reaction definitely negative when repeated. Of the 82 giving a negative reaction on the first occasion, 54 continued to do so, and only in 17 cases did the reaction become positive. (It should be noted that in each series of tests there were some cases of doubtful reactions.) It would seem, then, that a positive reaction is a more constant and reliable phenomenon than a negative reaction. The paper by Dr. Gorter, Dr. Korte, and Dr. Munk includes an account of an epidemic of scarlatina in an asylum for mentally defective children. Of 74 boys, 22 suffered from scarlatina. Of the remaining 52, only 12 gave a positive reaction. Next day one of these 12 developed scarlatina. Of the remaining 11, six were given no specific treatment, yet some time later five of them were found to give a negative reaction, although in the meanwhile they had shown no clinical evidence of scarlatina. This observation would seem to indicate that immunity to scarlatina may be acquired by contact with it no symptoms are apparent. In the third paper Dr. Jundell and Dr. Lönberg, of the Karolinska Institute, give an encouraging account of 17 cases of scarlatina treated with antitoxic scarlatinal serum, obtained from a horse immunised to a toxin-forming strain of streptococcus from a case of scarlatina. This paper also contains a useful summary of the work already done in connexion with passive immunisation against scarlatina.

THE TREATMENT OF CATARACT.

"The verdict of the Indian peasant is destined to decide the treatment of cataract as it has decided that of stone in the bladder."

THIS is the dictum of Lieut.-Colonel Henry Smith, I.M.S. (retd.), whose own intracapsular operation is well known, and has created for him such a reputation in the Punjab that the number of operations performed in that province by his method has increased fourfold during the last 30 years. In the other provinces of India, where capsulotomy is practised, the figures have remained comparatively stationary.[1] How is it that in this country no intracapsular operation for cataract has as yet been established in the practice of the great majority of ophthalmic surgeons? The advantages are obvious. No soft matter and no capsule can be left in the eye to cause subsequent irritation and to obstruct vision. If the operation goes well the eye is as good as any eye without a crystalline lens can be. On the other hand, there are certain disadvantages. Whichever of the two principal intracapsular operations—Smith's or Barraquer's—is chosen, there is always the danger that in unaccustomed hands vitreous may be lost. How serious a slight loss of vitreous may be is a matter on which there may fairly be a difference of opinion, but there can be no doubt that a considerable loss is dangerous for the future of the eye. It is acknowledged on all hands that the results of an intracapsular operation in the hands of Smith himself, or Barraquer himself, are excellent. The success of both operations depends upon the rupture of the suspensory ligament which normally keeps the lens in its place; this rupture has to be done by the exercise of just the right amount of force, for if too much is used there may be a large loss of vitreous. Smith's technique depends upon the pressure of a squint-hook on the external surface of the cornea, while the lids are kept apart by a skilled assistant to avoid the pressure of a speculum. Barraquer uses a special instrument by which a vacuum is created and the lens is drawn out. Smith, however, maintains, in the article already referred to, that Barraquer does, in fact, exercise pressure with his instrument, and that the actual technique of Barraquer's successful operations is analogous to that of his own, and that the reason why so many who have tried Barraquer's method have failed is simply that they have not understood this fact. This is not the place to describe the details either of Smith's or Barraquer's technique. Colonel Smith looks forward to the day when the capsulotomy operation now in vogue will be relegated to the dust-heap. Nevertheless, there is something to be said for conservatism in this matter. Before the majority of ophthalmic surgeons will adopt either of the new methods it is not enough to demonstrate to them many brilliant successes. They must also be assured that the small percentage of complete failures that even the best of surgeons must expect to meet with during his operative career is not in danger of being made less small. Without that assurance no new operation has a chance of being generally adopted in this country.

[1] Indian Medical Gazette, March, 1927.

TUBERCULOSIS IN THE FRENCH MERCHANT MARINE.

THE Superior Council of the Merchant Marine is impressed with the prevalence of tuberculosis among the personnel of the French Merchant Service. Dr. Marcel Clerc, who is a member of the Council and has had large experience of the sea in mail steamers, can give no statistics[1] although he has part of the evidence before him at a tuberculosis dispensary in the Department of the Seine. Dr. Clerc assumes rather airily that things are better in England and Germany than in France, and he quotes certain pre-war figures from large French shipping companies which suggest a death-rate from tubercle among their sailors at that time of 0·9 per 1000. He then sets himself to discover what can best be done. Tubercle has been ascribed to poverty, bad housing, and drink, which France cannot delay to put right, but there must be an element of infection too, resulting in the relapse of an old or the occurrence of a new infection, and the first practical step must be therefore to exclude infection from all ships and fishing boats. The 1921 Congress of Hygiene at Paris resolved that no sailor with open tuberculosis should be allowed to join any boat or ship, and that the provision of cubic space and ventilation should be more generous. The first measure ought to be more effective in France than in England, for French seamen, being registered in the *Inscription Maritime* that they may be called up in war, are all known to the authorities. But the resolution has remained apparently a pious hope, and Dr. Clerc demands that all seamen shall be examined medically on entering the service and again each time on joining a new ship, and any who are found to be expectorating tubercle bacilli shall be rejected and ordered to the local tuberculosis dispensary for appropriate treatment and the care of their families,

[1] La Tuberculose dans la Marine Marchande. By Dr. Marcel Clerc, Member of the Superior Council of the Merchant Marine. Paris: Vigot Frères. 1926. Pp. 64. 1s.

as is done for civilians in general. Fortunately, there is in France a fund which pensions seamen, when incapacitated by accident or disease, if these are certified by their captains as caused by duty; and, in fact, 37 per cent. of the pensions granted at Dunkirk in 1920 were for phthisis. Pensions out of funds for sailors should, however, only be granted to men who contract disease as sailors—that is to say, men certified sound when they joined the service. This is the procedure of all the large employers of labour in France; they accept no new employees unless declared medically fit. At present tuberculous seamen are only excluded from ships trading to the U.S.A., inasmuch as an infected seaman involves the ship in heavy expense at an American port. Dr. Clerc has evidently given much time and thought to this question of the prevention of tuberculosis at sea, and his careful studies should bear fruit in time. Tuberculosis has been halved in the British Navy in the last 20 years, and, perhaps because of more careful medical examination and better hygiene, apparently in the British mercantile marine as well.

MEDICAL OFFICERS UNDER THE POOR-LAW.

FOR some time past a Joint Committee of both Houses of Parliament has been considering a Bill which has for its object the consolidation of all the Poor-law statutes relating to the relief of the poor. This Bill received the Royal Assent in the session just closed, under the title of the "Poor-law Act, 1927." The Act commences with the famous Poor Relief Act passed in the reign of Queen Elizabeth and ends with the Act passed last year. In view of the length of time covered and the numerous statutes which have been passed (some of them in conflict with one another, whilst others have become obsolete wholly or in part), it may be useful to see what is the position of medical practitioners under the Poor-law as it stands to-day.

In the first place, we may classify Poor-law medical officers into two classes—viz., indoor (which does not necessarily mean resident) and outdoor. Indoor officers are appointed either to a workhouse (or "institution" as it is more generally termed), an infirmary or hospital, children's homes, or casual wards. Outdoor medical officers are appointed for a specified district to attend to poor persons living in their own homes. In the Metropolis medical officers may be appointed to dispensaries at which persons, who are provided with an order from a relieving officer, may receive attention.

Tenure, or continuance in office, of medical officers is regulated by Orders of the Minister of Health or his predecessors. Article 1 of the Medical Appointments Order, 1857, prescribes that a workhouse medical officer

"shall hold his office until he shall die or resign or be proved to be insane by evidence which the Poor-law Board shall deem sufficient, or be legally disqualified to hold such office, or be removed by the Board." (The Minister of Health is now substituted for the Poor-law Board.)

In the case of infirmaries or hospitals and children's homes, as also of institutions provided by joint committees for feebleminded persons, and the like, special orders are issued by the Minister. The foregoing observations apply also to outdoor (or district) medical officers; indeed, there is no reason why the two appointments should not be combined. Although guardians have the right of appointing a medical officer, they have no power to dismiss him (though they can suspend him). The Minister will only accede to the guardians' wishes when the amount of compensation has been mutually agreed between them and the officer. Under the Poor-law Officers' Superannuation Act, 1896, guardians are empowered, with the sanction of the Minister, to pay an amount not exceeding twice the preceding year's salary and emoluments. The medical officer has also a statutory right to the return of the amounts deducted from his salary under that Act. If the Minister thinks it expedient for the purpose of improving the classification and management of any classes of poor persons that a resident medical officer should be appointed for any Metropolitan workhouse, he can determine or vary any officer's contract and direct the board of guardians to pay compensation by way of increased salary or otherwise.

Under the Poor-law Act, 1927, the Minister may:—

"by order, either upon or without any suggestion or complaint in that behalf from the Board of Guardians remove, or suspend, any paid officer of the Board whom he considers unfit or incompetent to discharge his duties, or who at any time refuses or wilfully neglects to obey and carry into effect any rules, orders, and regulations made by the Minister. . . . Any person so removed or suspended shall not be competent to be appointed to, or to fill any paid office connected with the relief of the poor in any Poor-law union except with the consent of the Minister."

This section of the Act purports to bring the law into line with the existing practice. Under the statutes previously in force an officer who had been removed from one union could legally be appointed in another union, but the practice has always been to construe the statute as meaning that such an officer is ineligible to serve in any union unless the Minister assents thereto. The power of the Minister as regards removal is far-reaching. In the evidence given before the Joint Committee it was stated by a witness that he hesitated to say how often the Minister exercised the power of removal, but that he would not be surprised if there were four or five cases in each year of complaints.

The power of the Minister came before the Courts on two occasions—viz., in *ex parte* Teather (1850) 19 L.J.M.C. 70 when it was held that a relieving officer could be removed by the predecessors of the Minister although no charge had been alleged against him; neither had he been given notice nor given an opportunity of making any defence. So also in *ex parte* Molyneaux 7 L.T. 599 it was decided that a chaplain (who has the same tenure of office as a medical officer) was removable as unfit for his office and that no grounds need be assigned for such removal.

The Act makes no change in the duties of medical officers. These duties are prescribed by the Minister under his general statutory powers and they are contained in the General Orders. The main duties of a workhouse medical officer are contained in Article 59 of the Poor-law Institutions Order, 1913; those of the district medical officer are contained in Articles 198–200, 205–206 of the General Consolidated Order, 1847, as amended by the General Order of 1879, and the Powers of Guardians Order, 1921. Under the latter Order a district medical officer is allowed to live outside his district if no suitable medical practitioner resident in the district is willing to act at a reasonable remuneration. The Act re-enacts the duty of a workhouse medical officer, after examination, to report in writing whenever any inmate is not in a fit state to leave the workhouse without danger to himself or others by reason of suffering from delirium tremens or from bodily disease of an infectious or contagious character. The guardians may give effect to such certificate by requiring the master of the workhouse to detain such inmate until such time as the medical officer certifies in writing that discharge may take place. The parent or next-of-kin may, however, give an undertaking to provide for the removal, charge, and maintenance of such inmate with due care and attention while the malady continues, and in that case the inmate must be discharged. It has been held by the law officers of the Crown that an inmate suffering from venereal disease cannot be compulsorily detained under these provisions, nor apparently can cases of pulmonary tuberculosis be so detained. As regards the introduction of intoxicating liquors into a workhouse, this is prohibited by the Act unless for the domestic use of the officers. If such liquors are otherwise required, the medical officer or the guardians must give a written authority to the master.

The provisions in the Act relating to Metropolitan dispensaries re-enact the existing law. It is, however, provided that the dispensary committee is to appoint the district medical officers. As the dispensary committee may be composed of persons who are not

members of the board, it is the practice for boards of guardians to make such appointments themselves, and no doubt they will continue to do so, despite the statutory rule. For the purpose of establishing dispensaries in London, the Minister has power to vary medical districts and the salaries and contracts of district medical officers. Another provision, which applies only to London, is that boards of guardians, with the consent of the Minister, may enter into arrangements with any public general hospital or dispensary situate within the union, for the reception and treatment of persons in receipt of relief, on terms to be arranged between the guardians, with the Minister's sanction, and the authorities of the hospital or dispensary.

In conclusion, it may be pointed out that the Act does not extend to the Lunacy Acts, the Vaccination Acts, Registration of Births and Deaths Acts, or the Poor-law Officers' Superannuation Act.

C.S.M.M.G.

THE Chartered Society of Massage and Medical Gymnastics would have it known that anyone who is entitled to add to his or her name the initials C.S.M.M.G. has been through a supervised course of training and has passed a professional examination of high standard. After these conditions have been satisfied, no certificate of membership in the Society is granted until an undertaking has been signed by the applicant to observe the three rules which follow :—

(1) Not to undertake any cases of massage except under the direction of a registered medical practitioner.
(2) Not to advertise except in recognised medical and nursing papers.
(3) Not to sell goods to patients in a professional capacity, and not to accept secret commissions on the sale of goods.

The undertaking not to advertise has, we are told, been loyally obeyed, although at times it places the qualified masseur or masseuse at so great a disadvantage when competing with the unqualified as to suggest a doubt as to its fairness. But whenever the question has been raised the council of the Society has held that public advertising would be derogatory to the profession of massage, and the undertaking still remains obligatory on entrants. There are now over 5500 masseurs and masseuses registered with the chartered Society. The majority of these are qualified to administer remedial exercises and medical electricity, and the register shows that the members are well scattered over the United Kingdom and the dominions overseas. An illustration is given in the prospectus now in circulation of the extent to which physical treatment is employed in the larger London hospitals. Among male patients between the ages of 16 to 70 at two of these, 10 per cent. received during the year treatment involving massage, exercises, or electricity, the number of individual treatments per patient averaging 25. The Society, which was incorporated in 1900 and revivified in 1920 by amalgamation with the Manchester Institute of Massage and Remedial Gymnastics, has an advisory committee containing the names of ten representatives of the medical profession. Standing for the same ideals of professional education and social service as does the medical profession itself, the Society appeals to physicians and surgeons to employ only those who have the right to subscribe themselves C.S.M.M.G. And the appeal seems to us fair and reasonable.

THE DEFENCE OF MEDICAL RESEARCH.

THE past year has seen a spirited assault on experimental medicine by antivivisectionists of various complexion. The newspapers have been full of letters from people with hazy views on medical progress and a warm sympathy with animals ; the false conception of vivisection as torture has induced several hundred thousand of our countrymen to sign petitions in favour of a Bill exempting dogs from experiment ; and the Royal Society for the Prevention of Cruelty to Animals has only just been saved from using its important influence in the same direction. Whilst we are confident that medical research has nothing to fear from an instructed public opinion, it is clear that ignorance falls an easy prey to sentimentalism and inaccurate statistics, and the necessity for experiment on animals needs reiterated explanation at the present time. Many Members of Parliament, themselves uninterested in the subject, have unwisely pledged their support to measures for the limitation of research ; the funds at the disposal of antivivisectionist societies are apparently considerable, and the different arguments against animal investigation are put well enough to convince many sorts of well-meaning people. Opposed to all this we have the general consensus of the medical profession, and the work of one small organisation which aims at influencing public opinion, the Research Defence Society. The profession, as a whole, though in favour of experiment, is somewhat indifferent to the controversy, having other things to think about ; the Research Defence Society has a small membership and therefore small resources. As Lord Dawson has pointed out, it is the public that would suffer from a veto on vivisection and it is for the public to decide ; but the profession has a duty to declare its opinion and it is much wiser to strengthen the defence mechanism now rather than wait until the infection of sentimentalism has got a real grip of the community. The Research Defence Society describes itself as "a national society of men and women united to promote national health and efficiency, to bring about a better understanding of the value of medical and surgical studies, and to expose the false statements which are made against them." As such it must appeal to public-spirited medical men, and as we have said before, it should have a membership as wide as the Medical Register. Naturally the subscription to a propagandist body cannot be nominal, but it is small. Five guineas brings life membership ; members subscribe 10*s.* ; associate members 5*s.* ; whilst undergraduates or students are eligible for membership at 2*s.* 6*d.* a year. The journal of the Society, entitled *The Fight Against Disease*, may be had from the Secretary at 11, Chandos-street, London, W. 1.

FLEXNER DYSENTERY TREATED BY THE BACTERIOPHAGE.

THE use of the bacteriophage as a therapeutic agent has given rise to much debate. D'Herelle has advanced large claims for its utility in such infections as typhoid and dysentery, and it has also been employed in the treatment of septic conditions. The results reported by others, however, have not borne out the claims of its discoverer, although in other fields his extensive work has been very generally confirmed. It seems probable that if the agent is capable of being employed for the active destruction of bacilli in the body its activity should be especially obvious in such a condition as dysentery, in which the disease is local, the organisms do not invade the tissues to any marked extent, and the bacillus is one upon which the bacteriophage has a marked effect. We have recently received from the Malay States [1] a report of the treatment of 22 cases of Flexner dysentery by bacteriophage which was provided by d'Herelle himself, and therefore may be considered authentic and of undoubted activity. Dr. W. Fletcher and his collaborator state that dysentery is one of the three most deadly diseases in the Malay States—the other two being malaria and tuberculosis—and it may be taken that they are sufficiently well versed in the vagaries of this malady to be good judges of the usefulness of any new form of therapy. Their investigation led

[1] The Bacteriophage in the Treatment of Bacillary Dysentery of the Flexner Type. By W. Fletcher and K. Kanagarayer. Bulletins of the Institute for Medical Research, Kuala Lumpur, Federated Malay States. No. 3. 1927.

them to the conclusion that the treatment "had no apparent influence upon the course of the disease due to this organism, nor did it eradicate the bacilli from the intestines of those to whom it was administered." Three tubes of the bacteriophage were administered orally, with an interval of 12 hours between each dose; in some cases a second course was given. A daily bacteriological examination of the stools was made to observe any effect produced by the treatment in causing disappearance of the bacilli. Apparently there was no such effect; the organisms remained present as long in these cases as in controls not treated by the method. These results accord with those of other observers. They are not, however, quite so clean cut as to condemn the bacteriophage out of hand as an impotent agent, and we should be glad to see an extended test of the treatment made by independent workers over controlled series of cases of acute bacillary dysentery, using a bacteriophage of maximum activity for the specific type of infection present. This should be possible in a country such as Malaya, where the disease is exceedingly common.

THE BRITISH ASSOCIATION.

THIS year's annual meeting of the British Association for the Advancement of Science will be held at Leeds under the presidency of Sir Arthur Keith, conservator of the Museum of the Royal College of Surgeons of England. The title of his address, which will be delivered in the evening of August 31st, is Darwin's Theory of Man's Descent as it Stands To-day, and this, like other subjects to be considered, is likely to arouse much interest among the general public, to whom the proceedings of the Association are nowadays reported at considerable length by the newspapers. The annual meeting has in fact two important functions; it stimulates the curiosity of the masses and it gives an opportunity for scientific workers to meet each other. Members of the Association who are not specialists and who wish to acquire general information have once again an immense choice set before them, but the days have gone by when a person of average attainments and education might expect to understand and enjoy the discussions and papers at most of the sections. Though medicine does not figure in the programme there will be a large number of papers on physiology, psychology, education, and other related subjects, and among the presidential addresses to sections will be those of Dr. C. G. Douglas on the development of human physiology, and of Dr. William Brown on mental unity and mental dissociation. Dr. F. A. E. Crew is to give an evening discourse on the germ plasm and its architecture, and a discussion on the chemistry of hormones will be opened by Prof. G. Barger, Prof. H. S. Raper, Mr. F. H. Carr, Prof. J. C. Drummond, Prof. E. C. Dodds, and Prof. J. Mellanby. A paper on the effect of mental stress on man will be contributed by Prof. J. S. McDowall; Dr. D. N. Buchanan will deal with the psychological effects of flickering light; Dr. F. W. Edridge-Green will read two communications on colour-blindness; Dr. A. H. Mumford will discuss body measurements and respiratory tests in connexion with the progress of school-children; whilst Dr. R. D. Gillespie will give a paper on the estimation of character and temperament in the light of psychological medicine. As is natural, there are to be many contributions on biochemical subjects. Dr. W. Cramer will speak on the requirements of the population in milk-fat (vitamin A) and the available supply; Colonel C. J. Bond on the effects of some radiated and non-radiated stearols on the cellular constituents of the blood; and Dr. E. R. Dawson and Mr. B. S. Platt on the action of pancreatic lipase. Among the many topics of more popular interest are the physical superiority of the so-called uncivilised races, the psychology of special scholastic disabilities, "the importance and value to the Empire of the transplantation of boys," the control of plant diseases, and school examinations. Mr. H. R. Silva will speak on the experimental control of introspection, and Mr. L. Wynn-Jones on the appreciation of wit. The relentless march of specialism is illustrated by the fact that the programme does not allow those who are interested in Mr. Wynn-Jones's paper to hear the observations of Dr. Marion Hirst and Dr. C. G. Imrie on the excretion of creatine.

B.C.G. VACCINE.

DURING the last two years we have frequently[1] referred to the work of Prof. A. Calmette, of Paris, who recommends general protection of children against tuberculosis by means of the vaccine B.C.G. The letters C and G in the name of this vaccine stand for Calmette and Guérin, who are responsible for its introduction, whilst the letter B stands for *bilié*, and refers to the method by which it is prepared. Tubercle bacilli are grown over a period of many years on glycerinated ox bile, and this medium so reduces their virulence that living cultures are apparently harmless even to newborn infants when given by the mouth. According to Prof. Calmette and his colleagues, three doses of such a culture given to children in the first fortnight of their lives—i.e., before they have been infected by other tubercle bacilli—produce a high degree of immunity against later infection by tuberculosis.

Not long ago we briefly reviewed[2] the evidence in favour of this important claim, and pointed out that more work must be done before it could be accepted. It may be of interest, therefore, to give a brief description of an independent investigation conducted at Barcelona by Prof. L. Saye[3] and other members of the medical faculty. Their preliminary communication records the results of treating 134 infants with B.C.G. vaccine given in milk by the mouth within 14 days of birth; it is stated that 203 children were actually treated, but many were lost sight of, and in other cases insufficient time had elapsed to allow of conclusions being drawn. The remaining 134 cases they divide into two groups: (*a*) 113 in which the infants were brought up in an environment known to be tuberculous, and (*b*) 21 in which no such contagion could be found. The total number of deaths was 26, giving a mortality of 15·7 per cent. in the (*a*) group and of 3·7 per cent. in (*b*); but of these 26 infants only eight died of tuberculosis or of infection that was probably tuberculous. The actual mortality from tubercle thus appears to have been almost exactly 6 per cent., though the figure is not definitely stated. Having regard to the difficulty of excluding the presence of tuberculosis in infants clinically, the death-rate probably offers the best available evidence, and these figures appear to be favourable. But unfortunately Prof. Saye and his colleagues present their figures in such a manner that it is difficult to arrive at definite conclusions. There are numerous tables showing the relation of an affected father, mother, or other relative to the degree of infection and demonstrating other points of interest, but there is none which shows at a glance the actual effect of the inoculation with B.C.G. vaccine. This would be regrettable but for the fact that the experiment as a scientific test was vitiated at the very beginning; the investigators state that whenever it was necessary they tried to ameliorate the condition in which the vaccinated infant lived, and that they removed those whose parents were gravely infected. Their inquiry, therefore, gives no information about the value of this vaccine in protecting infants who are living in ordinary slum conditions; it is admitted that hygienic measures alone can greatly reduce infant mortality from tuberculosis. All that can really be deduced from the facts given is that Calmette's vaccine, whether given by the mouth or hypodermically

[1] THE LANCET, 1925, i., 1352; 1926, i., 1046.
[2] THE LANCET, 1927, i., 936.
[3] Revista Medica de Barcelona, March, 1927.

(in a few cases) is quite innocuous, and that when its administration is combined with hygienic measures and with removal from sources of infection there is a considerably reduced mortality. It remains doubtful how far this result is due to each of the three factors.

THE ULTRA-VIOLET RAYS OF SUNLIGHT.

SOME interesting data have recently been collected illustrating the seasonal variations of the ultra-violet component of sunlight in Chicago. In a short communication to the *Journal of the American Medical Association* for July 16th Dr. Herman N. Bundesen and his co-workers give the results of systematic spectrographic records of the sun's rays for the period November, 1926, to May, 1927. The daily records obtained from plates taken with a diffraction grating compare very closely with those of the quartz spectrograph, and both are employed to illustrate the seasonal variation in the ultra-violet value of sunlight and to emphasise the screening effect of a smoke pall in cutting out the biologically active rays. In view of the work of Hess and Weinstock, who have shown that 3130 A.U. is the longest wave-length of antirachitic value, while the maximum of potency lies at 3020 A.U., it is interesting to note that from November to February only a low intensity of the region 3130–3030 A.U. was observed, while no rays shorter than 3030 A.U. were recorded for the same period. From this it would appear that the sun's rays during the winter are of no antirachitic value, and this is in agreement with clinical experience. From February onwards steady improvement was noted, and on May 16th 2990 A.U. was registered as the short wave-length limit. In considering possible substitutes for sunlight during the dark months the writers draw attention to the incandescent filament lamp as a source of near ultra-violet rays. The biologically active rays from 3100 A.U. onwards emitted by filament lamps are quenched by a glass bulb, but this can be avoided by making the bulb of quartz or vitaglass. In studying the properties of the latter and similar glasses, the writers confirm the findings of the Council of Physical Therapy (noted in THE LANCET of August 6th, p. 316) to the effect that vitaglass is almost completely transparent to the ultra-violet rays of sunlight. Vitaglass with a transmission spectrum extending to 2760 A.U. is evidently an efficient substitute for quartz in any work in which sunlight or the incandescent filament lamp is the source of ultra-violet rays.

OUR readers will regret to learn that Mr. Alban Doran is suffering from acute glaucoma, and is at present a patient in St. Bartholomew's Hospital, under the care of Mr. Foster Moore. His sight has been failing for time some—a calamity for anyone, but particularly for so active a student as Mr. Doran has been ever since he entered St. Bartholomew's Hospital almost 60 years ago. Even when he retired from active consulting practice in 1911, and had earned a well-merited rest, he returned to the Museum of the Royal College of Surgeons, where, as a young man, he had assisted Sir William Flower and afterwards Sir James Paget. He then devoted himself and his ripe scholarship to various voluntary tasks. He drew up a new catalogue of gynæcological specimens, and afterwards undertook and completed a descriptive catalogue of the great collection of surgical instruments and appliances preserved in the Museum of the College, a task which occupied him for 12 years. No one has worked for his profession more industriously and less selfishly than Mr. Doran, and we are glad to know that his old hospital is doing everything for his comfort and recovery.

TUBERCULIN DISPENSARY BENEVOLENT SOCIETY.—Patients may be sent to the Tuberculin Dispensary at 32, Fitzroy-street, W. 1, for consultation and treatment on Tuesdays and Fridays at 2.30 P.M. Medical men are invited to attend.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CCXXXVII.

THE TREATMENT OF SINUSES.

II.* SINUSES IN SPECIAL SITUATIONS.

The Frontal Region.

HEAD sinuses in the frontal region are often associated with infection of the air sinuses, when the treatment of the latter is the primary consideration; this also applies to sinuses over the mastoid. Sinuses elsewhere on the skull, especially those over the frontal region which are higher up than the situation of the air sinus, may result from a specific infection in the form of a gummatous inflammation with necrosis, and in these days this possibility is apt to be overlooked. When specific disease is the cause the sinuses readily yield to the appropriate treatment for that condition, and do not require local intervention. If the discharge from a sinus on the cranium is noticed to pulsate, it will probably be an example of extradural abscess which has found its way to the surface spontaneously but has not sufficiently drained.

The Jaws.

Sinuses about the jaws are nearly always caused by pathological conditions of the teeth. Even when these appear normal they ought to be suspected, and should be carefully examined and finally X rayed. More than once a tooth has been sacrificed and a sinus cured when the dental condition was reported to be above suspicion. A tooth which becomes loose from time to time or has been previously injured is often a dead one, and keeps up an infection around the root which in turn may be the cause of a sinus. Even if the mouth is edentulous the jaws should be carefully X rayed, since fragments of teeth buried and long forgotten may yet be the cause of so much infection as to give rise to a sinus. Unerupted wisdom teeth may also be associated with inflammatory trouble followed by the development of an external sinus.

When a tooth is the cause of a sinus, the latter almost always heals as soon as the offender has been removed, irrespective of the duration of the sinus, which may have existed for years. If the correct tooth has been extracted and the sinus persists for longer than a week or two it may be wise to explore the socket with a sharp spoon, for occasionally bone débris may be keeping up the infection. If a tooth is not the cause, a sequestrum is almost sure to be so, and will probably be easily detected on examination of the infected socket, or will be seen by the X ray. Tubercle and actinomycosis both occur in the jaws and may be the cause of sinuses, but neither is common in this situation.

The Neck.

In the neck sinuses are most often associated with broken-down tuberculous glands, and are commonest when the gland is deeply situated beneath the sternomastoid muscle. Such cases illustrate the general problem of sinuses due to tubercle. The ideal treatment is to remove the focus, and if the group of glands is localised, and presumably infected from the tonsil or nasopharynx, their removal by a well-planned dissection is the method of choice. Long-standing sinuses are apt to be secondarily infected, and an operation which will open up fresh cellular tissue must not be undertaken until an attempt has been made to diminish such secondary infection by careful and repeated dressing with a reliable antiseptic; for this purpose the 1 in 1000 perchloride of mercury is the best. When it is not deemed expedient to excise the focus with the sinus, the judicious use of the sharp spoon will be most helpful, but the

* General Considerations in Treatment of Sinuses appeared last week.

object in view should be to scoop out the tuberculous débris at the bottom of the sinus, and not merely to scrape the track itself. When local interference is not contemplated, the general principles in the treatment of surgical tuberculosis must be conscientiously carried out—namely, rest, abundant food, fresh air, and sleep. Multiple tuberculous sinuses in the neck furnish the most promising field for light therapy.

Sinuses resulting from vestigial remnants such as the thyroglossal duct and the branchial clefts are often very small, but are in characteristic situations, and at some stage clear mucus escapes even though at other times the discharge is purulent. For their cure operative interference is essential.

Sinuses Connected with the Joints.

In the neighbourhood of joints tuberculous sinuses are common. Here the treatment merges into that of tuberculous joints in general; but I must insist on the importance of prolonged rest, for it is the continuity of the treatment rather than the method which is likely to lead to success. For tuberculous sinuses in general the best local application is pure carbolic acid, which can be applied on a probe, after which the orifice of the sinus is plastered with a paste made of iodoform mixed with 1/1000 perchloride of mercury in watery solution. The application requires to be made every week or ten days, and the treatment by rest is to be continued indefinitely. Very few tuberculous sinuses will refuse to heal if the treatment is sufficiently prolonged. It is in these cases, however, that adjuncts such as artificial sunlight, the injection of Beck's paste, and so forth are most useful. Personally, I have always been rather chary about using vaccines, but if sinuses like those under discussion have resisted treatment for long, then a judicious use of a vaccine may just happen to start curative processes which might otherwise be indefinitely delayed.

Sinuses in the course of the long bones are usually the result of sequestra, and these must be localised, identified, and removed. Very small sequestra may not always be clearly seen on X ray photographs; but usually those that do not show will be safely extruded by natural processes. When such tiny sequestra are suspected it is a good plan to explore the sinus occasionally with a probe, for this opens up the track and is often followed by the extrusion of the reluctant piece of dead bone.

Sinuses about the chest are most commonly due to unhealed empyemata, but they may be from tuberculous foci in connexion with the ribs, or pyogenic infection with sequestra; or may result from disease in the spine, from which the pus may travel forward to find its exit on the lateral aspect or even the front of the thorax. Sinuses over the sternum are often of specific origin.

Abdominal sinuses near the umbilicus may be due to a vestigial remnant connected with the omphalo-mesenteric duct. The discharge in these cases is characteristically mucoid. Tubercle not infrequently gives rise to a sinus at the umbilicus. Sinuses in the iliac region or over the gall-bladder area are often associated with appendicitis, or gall-stones, or incompletely successful interference for these conditions, so that either overlooked enteroliths or left-over gall-stones are the commonest causes, and this possibility must first be eliminated. Occasionally a new growth in the bowel not otherwise suspected gives rise to a sinus, but in this instance the latter is in the midst of a characteristically hard area, or this induration soon makes its appearance. So-called left-sided appendicitis, the result of infected sacculi in the sigmoid, may also cause and keep up sinuses in the left iliac fossa.

Sinuses on the posterior aspect of the abdomen are probably associated with retroperitoneal infections or perirenal phlegmons.

In the *perineum* the urethra and the anal canal or rectum are always to be looked upon as the most likely situations for causative factors. Any sinus within an inch of the rectum probably owes its origin to a communication with the bowel, and a diagnosis can be made by feeling for the small indurated area, which, in these circumstances, can always be detected between the mouth of the sinus and the anus, just as if a wire had been buried in the tissues. A sinus immediately behind the anus may be of congenital origin, the result of a post-anal dermoid or some remnant of the neurenteric canal.

About the coccyx sinuses are often of obscure origin, and it may be most difficult to find the cause and to bring about their cure. The prognosis should not be too optimistic.

A sinus on the *sole of the foot* is highly suggestive of a perforating ulcer, and it may be one of the earlier signs of a central nervous lesion, and is certainly often present when the latter is suspected, but the ordinary signs are not sufficiently clear.

Actinomycosis is characteristically associated with multiple sinuses. For this condition iodine administered in fresh milk has proved wonderfully successful. The treatment begins with 7 minims of the fresh tincture in 2 ounces of milk, thrice daily, after food, but the dose may be increased to 20 minims thrice daily without fear of evil consequences.

Residual sinuses—that is to say, cases in which the cause has been found and removed and the sinus still persists or sinuses in which all efforts have failed to disclose the causative factor may have to be dealt with. In these circumstances a whole variety of methods have been tried, and all have been more or less successful at times. I would place first the treatment by attention to the general health under the best possible conditions. Locally, the injection of Beck's paste has sometimes proved successful, and now one would be disposed to try artificial sunlight. But of the greatest importance is probably rest for the part with firm bandaging, so that the walls of the track may be kept in apposition.

If these measures are not applicable or fail, then certain sinuses which are not too long and which do not pass between structures of great importance may be laid open in their entirety, so as to convert them into open wounds. In other cases, scraping with a sharp spoon may set up a reparative process; or, better than either of these methods when applicable, is the excision of the whole sinus track.

G. GREY TURNER, M.S. Durh., F.R.C.S. Eng.,
Professor of Surgery in the University of Durham; Surgeon, Royal Infirmary, Newcastle-on-Tyne.

THE LATE DR. W. R. S. WATKINS.—The death took place on August 14th at his residence in Eccles of William Richard Spencer Watkins, M.B., F.R.C.S. Edin., in his forty-ninth year. Dr. Spencer Watkins was born in South Wales and received his medical education at Cardiff and at the extra-mural medical school and University of Edinburgh. He graduated in medicine in 1903, and in 1908 became a Fellow of the Royal College of Surgeons. For a time he was house surgeon and senior resident medical officer at King Edward VII. Hospital, Cardiff; later he settled in the Eccles and Pendleton district of Manchester, where he practised successfully for many years. During the war he was a surgeon in the 19th General Hospital at Alexandria, afterwards acting as medical officer of the 42nd Divisional Train (R.A.S.C.). He leaves a widow and four children.

DONATIONS AND BEQUESTS.—Lieut.-Colonel Alfred Tennant Miller, of Great Somerford, Chippenham, left £2500 for such hospitals or infirmaries in London as the executors may select; £2500 to charitable institutions in Great Britain for the benefit of those who served in the Great War to be chosen by the executors; £500 each to the Glasgow Royal Infirmary, the Western Infirmary, Glasgow, the Victoria Infirmary, Glasgow, the Royal Infirmary, Edinburgh, and the Malmesbury Cottage Hospital.—Mr. Warren Tay, F.R.C.S., Croydon, Surrey, left £1000 to the London Hospital Medical College, £750 to the Royal London Ophthalmic Hospital, Moorfields, E.C., and £250 to the Queen's Hospital for Children, Hackney.—Mrs. Ellen Boyd, of Twyford, Berks, besides other bequests, gave £1000 each to King Edward's Hospital Fund for London and King's College Hospital, £500 to Maidenhead Cottage Hospital, £250 to the Royal Berkshire Hospital, Reading, and £1650 to other charities.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are some of the 1926 statistics of four county boroughs and two urban districts :—

Name of district and mid-year population.	Birth-rate.	Death-rates per 1000 of the population.					Death-rates per 1000 births.		
		All causes.	Tuberculosis.	Cancer.	Resp. diseases with influenza.	Heart disease.	Diarrhœa under 2 years.	Infant mortality.	Maternal mort. from childbirth.
Brighton .. .. (139,500)	14·0	12·5	1·08	1 86	1·3	1·9	11·0	67	4·8
Hastings .. .. (61,340)	12·6	15·1	1·17	2·49	2·0	2·5	8·0	64	1·3
Carlisle .. .. (56,140)	20·5	12·9	1·12	1·19	1·7	1·6	12·0	82	6·0
Bury .. .. (56,840)	14·3	12·8	0·83	1·20	2·7	1·9	2·4	76	9·8
Shrewsbury .. (31,960)	18·2	11·2	0·78	1·34	1·7	2·4	3·4	63	5·1
Weston-super-Mare .. .. (26,410)	12·1	12·6	0·68	1·63	1·2	2·2	0·0	75	6·2

Brighton.

Dr. Duncan Forbes says the outstanding feature of the year's work is the establishment of an orthopædic scheme which has been begun in a modest way. The corporation has arranged with the Royal National Orthopædic Hospital that they should allocate five beds at their Stanmore institution for the reception of Brighton cases. Payment is to be made at the rate of £2 per week per bed occupied for patients under 16 and £2 10*s.* for patients over 16. The hospital is to appoint an orthopædic surgeon to take charge of the scheme, to pay monthly visits to an out-patient orthopædic clinic in Brighton, and to recommend an orthopædic nurse, who shall be in the whole-time employment of the Brighton Corporation. Patients are being sent to the clinic from the tuberculosis dispensary and from the infant welfare and school medical departments. It is satisfactory to know, says Dr. Forbes, that there will be fewer cripples in the future and that what cripples there are will have the best treatment for the remedy of their disablement.

Although 2000 additional dwellings have been occupied since the war, there are still bad cases of overcrowding, especially distressing when a member of the family is suffering from open tuberculosis. Until these dangerous conditions are remedied the further building of new houses must continue. The first area for slum clearance has now been completed. The chief difficulty is that tenants whose average rental is 7*s.* to 8*s.* a week cannot pay the rent of the new houses which varies from 12*s.* 6*d.* to 15*s.*, and some of the families are really unfit for new houses. Under present circumstances it is difficult to arrange the necessary move round and the slum problem can only be dealt with in piece-meal fashion. To facilitate the move round the council have bought suitable houses, which after the present tenants have been moved to the new houses will be reconditioned to receive the tenants of the slum areas at a low rental. There were 13 notifications of ophthalmia neonatorum; three cases were very mild, but four were subsequently admitted to the Brighton Sanatorium; one child admitted in a hopeless condition on the tenth day of the disease lost the sight of both eyes, and another admitted on the twelfth day lost the sight of one eye. Out of the 105 milk samples examined for tubercle 13, or 12·4 per cent., gave a positive result. As a result nine cows were dealt with under the Tuberculosis Order, but in five instances no infecting cow was found, probably owing to drying off, removal, or slaughter before the farms were visited. The discovery of tuberculous calves at the abattoir has led to the elimination of one or two tuberculous cows from milk herds as the result of following up.

Hastings.

Dr. G. R. Bruce points out that the death-rate of just over 15 becomes 10·8 when corrected for age and sex constitution of the population. The number of new cases at the infant centres was about 77 per cent. of the total number of births. The work at the two antenatal clinics has made good progress, the attendance at one being nearly double that of the previous year. The Fernbank Maternity Home, a voluntary institution, accommodated 100 confinement cases but could easily take 200. Forty of those admitted were municipal cases, for whom the corporation guarantees the full fee of 2½ guineas. There is no waiting-list for patients with tubercle. Throughout the year negotiations have continued with the Royal East Sussex Hospital for the provision of an orthopædic clinic, and it is hoped that this scheme will be in progress during 1927.

Housing activities have included the completion of 48 flats for the rehousing of tenants from the clearance scheme in the old town, also 50 steel houses on one estate and the commencement of 50 on another. When these are complete the corporation will have built nearly 500 houses since the war, but this will not, says Dr. Bruce, "solve the problem either of overcrowding or of unhygienic houses, nor, unfortunately, of the unsatisfactory tenant." The main source of the water-supply is eight deep wells in the Ashdown Sand with a supplemental supply from the Brede River. The present supply is inadequate to meet the full pressure of the summer season and the supplementary supply has to be chlorinated. During 1926 application was made to Parliament for power to obtain water from an area in the chalk between Eastbourne and Brighton. The application was opposed by neighbouring authorities and thrown out, mainly on the ground that water-bearing areas nearer Hastings had not been exhausted. The successful solution of the water difficulty to meet present and future needs is one of the most pressing public health problems before the corporation. During 1926 88 cows were slaughtered at the knacker's establishment within the borough under the Tuberculosis Order, the majority coming from the milk-producing districts of East Sussex and Kent, and two from dairy farms within the borough. The hours of bright sunshine registered during 1926 were 1588·5.

Carlisle.

Dr. Joseph Beard reports that 24 samples of fresh cow's milk and four of pasteurised were examined for tubercle bacilli. One sample from an outside dairy gave a positive result. The county veterinary inspector examined 46 cows on the farm and found three with disease of the udder. The city inspector had samples examined from a suspected animal at each of two farms. As a result both were slaughtered under the Order, and advanced disease was found post mortem. Up to the end of the year the corporation had received the sanction of the Ministry for the erection of 1344 houses—160 parlour and 1184 non-parlour. Of these, 984 have been erected. The sanitary inspector's report gives some particulars of the move round of the tenants. Thirty-six new houses were built for the accommodation of 38 tenants dishoused under an improvement scheme. Only six of the 38 elected to take the new houses, and 32 had to be rehoused by the method of exchange. In connexion with the demolition scheme 24 houses were erected on one of the estates, but only five of the 36 tenants of the demolished houses would take the new ones and the remaining 31 were accommodated by exchanges arranged through the sanitary inspectors. In the last case several of the tenants had already moved once from another condemned area, and the inspectors found great difficulty in getting private owners to accept them for the second move.

Bury.

Dr. G. Granville Buckley says the worst feature in the 1926 figures is the maternal death-rate from childbirth. Of the eight deaths, five were due to eclampsia. Some of these deaths might undoubtedly be prevented, he says, if expectant mothers would either consult their own doctor or attend at the antenatal clinic. The antenatal clinic was attended by 52 new cases, the total births in the borough being 816. The conversion of privies into w.c.s is proceeding very quickly; 1588 were dealt with during 1926. The chief occupations of Bury are the manufacture of textile goods, machinery, paper, and felt hats. The sewage is of a complex nature, and contains trade waste from tanneries, fell-mongers, wool-scouring, hatters, and breweries, and three separate systems follow the sedimentation tanks at the sewage works—namely, 3 acres of double contact beds, 2 acres of percolating beds, and a recently installed unit on the activated sludge system worked on the surface aeration principle. At present the sludge is disposed of by lagooning, but a complete sludge pressing plant is being installed. Emissions of black smoke which exceed the limit of two minutes per half-hour allowed for mill chimneys are notified at once to the firm, in order that the cause may be removed promptly. This action is much appreciated by the mill-owners. Bury has had a public abattoir since 1903. It is modern in every respect, with railway siding and cattle dock, so that animals arriving by rail need not be driven through the streets.

Shrewsbury.

Dr. A. D. Symons claims that Shrewsbury has as complete provision for maternity needs as any town of its size. The births numbered 588, and the new cases at the antenatal clinic show a steady increase—viz., 59 in 1924, 94 in 1925, and 123 in 1926. The maternity home is conducted by the Nursing Association, and patients are examined at the antenatal clinic before admission. Dr. Symons mentions as evidence of a "brighter Shrewsbury" movement the attention given to æsthetic considerations in architectural development and to the repainting and preservation of the old black-and-white houses, and goes on to say that the movement would receive a further impetus if the town council would adopt more efficient methods for the cleansing of the streets and the removal of refuse. The prosperity of the town will be increased if cleanliness combined with antiquity renders it more attractive to visitors. The main streets now have a waterproof surface, he says, and should be swilled in the early morning. Sweeping of the pavements opposite shops should not be permitted after 9 A.M. Modern dust-carts with a low body and an efficient cover should be substituted for the high carts, which create clouds of dust when a dust receptacle is emptied into them. Refuse tips need not be a nuisance, and an energetic supervisor should be appointed to see that they are properly covered over with soil, &c. Shrewsbury is not a very smoky place, but there are about a dozen works chimneys which intermittently belch forth large quantities of smoke, including three under the control of the corporation. As the town lies low, smoke is not readily blown away, but tends to hang. The domestic smoke is being reduced by the large use of gas. There are 2865 gas fires and 5623 gas cookers in the 7000 houses. More houses were built last year than in any year since the outbreak of the war—namely, 90 municipal, 76 by private enterprise with State assistance, and 32 others. A further 101 municipal houses will be completed during 1927.

In the selection of tenants preference is given to those with large families. The practice of taking in lodgers was one of the restrictions imposed on the tenants, but a recent survey showed that lodgers were being taken in 24 per cent. of the houses on one estate. In future application will have to be made to the housing committee for leave to take lodgers and will receive reasonable consideration. A campaign for cleaner milk was started during the year. The accepted limit for dirt in milk, says Dr. Symons, is two parts per 100,000. Proceedings were taken against a milk-seller whose milk showed 40 parts. The retailer pleaded a warranty; a summons was then issued against the wholesaler, but the magistrates dismissed the case. Another case was that of a cow-keeper who supplied milk 16 per cent. deficient in fat. An appeal to the cow confirmed the fact that the cows were giving milk thus poor in fat. The conclusion arrived at was that the cows were old, in poor condition, and badly fed, but that as there was no adulteration no legal action could be taken. Shrewsbury has a public abattoir but also two small private slaughter-houses.

Weston-super-Mare.

Dr. John Wallace mentions that two water-supply schemes are under consideration. The present supply from Banwell spring is a limestone water which is pumped to two reservoirs and to a water tower on Worlebury Hill (450 feet), which is capable of supplying the highest buildings in the district. The only streams in the district are "rhynes," by means of which land drainage is effected. The rhynes are considerably polluted by manured lands and pig and cattle sheds, and it is difficult to prevent this. Flooding causes complaints, and is relieved by the widening of culverts and the clearing of the rhynes. Gas is so universally in use for heating and cooking that the house refuse contains little ash. Also it is often difficult to see any smoke from which to judge the direction of the wind. Weston has a public abattoir and no private slaughter-houses. The hours of bright sunshine in 1926 were 1269·7, nearly 200 less than the previous ten years' average of 1454·2.

SCHOOL MEDICAL SERVICE.

—	No. on roll.	Average attendance.	Routine inspection.	Special re-inspection.	Per cent. of defects.
Blackburn .	17,065	15,009	4863*	6447	22·6
Coventry .	21,274	19,120	6428	8021	25·9
Scarborough	n.s.	n.s.	1315	1052	13·15

* With 1413 routine inspections outside the code groups, this is 6276. n.s., not stated.

Blackburn.

Dr. Oscar M. Holden describes the system of coördination by which, while each medical officer has his own duties, yet all share in the school work. Thus the medical officer of health is the school medical officer and assists with routine medical inspections as the need arises, and the assistant school medical officer who does the largest share of the school work is also assistant medical officer of health. The woman assistant medical officer devotes part of her time to school work, and the tuberculosis officer, who is also resident medical officer of the corporation hospital, is from time to time called upon to do routine school inspections. There is also close coördination in the work—for example, the record-cards of children who have attended the welfare centres are forwarded on to the school side upon the children reaching the age of 5. The children under 5 attending school remain under the care of the welfare department, and the health visitors continue to go to the homes when necessary. In school a "march-past" is made of these infants before the school medical inspector, and in this way obvious defects can be detected and treated. Then, again, the school dentist devotes 12 sessions to the maternity and child welfare department.

Dr. Holden deprecates the wholesale removal of moderately enlarged but healthy tonsils. Those whom he recommends for operative measures are the cases with enlarged, unhealthy tonsils and

adenoids, especially those who are mouth-breathers and whose past history consists of a succession of catarrhs and sore-throats. In his note on rheumatism he shows that in connexion with this disease it is imperative that a careful scrutiny be maintained on the condition of the throat and mouth in school-children. His very rational outlook has its result in the small proportion of parents who refuse to have the operations performed that have been recommended; out of 265 cases where treatment was advised 221 actually received operation under the authorities' scheme, and several others were dealt with through other channels. Special attention is given to after care of these cases at the clinic for remedial gymnastics in the form of breathing exercises and training in correct respiration, without which, Dr. Holden says, the operation of removal of adenoids is a waste of time and energy. The number of exceptional children noted is in general rather low, but accommodation seems to have been found for most of them, except that there is much need for more places in the residential open-air school. With the cripple children, however, the reverse is true. The scheme for the detection of crippling defects is certainly fairly comprehensive, including the work of an orthopædic surgeon, Dr. Briggs, and he is in close touch with the valuable clinic for remedial gymnastics; but there is no special physically defective school, which is obviously needed, and its provision could make it possible to reduce the unfortunately large number of children who have had to lose their treatment at the clinic owing to the inability of the parents to bring them.

Coventry.

Dr. E. H. Snell draws attention to the varying percentage of children who are said to require operative treatment for enlarged tonsils, and it is suggested that this depends so much on individual opinion that figures compiled by different doctors are of no comparative value. For instance, in 1914 and 1919, when an assistant school medical officer (Dr. Newton) was working alone, the percentage of cases referred for operation was 2·5 and 3 per cent. respectively; while later, when other doctors were also working, it was higher; 7 per cent. in 1925 and 16 per cent. in 1926. The ratio is reflected inversely in the proportion of those referred who were actually treated; for in 1925 this was 25 per cent., while in 1926 it was under 20 per cent.—i.e., out of five children who were recommended for treatment in only one was it actually secured. But the increase in the number of cases referred may be due not merely to personal equation but to increasing realisation of the value of removing a septic focus or pathway for infection. We note that last year Dr. Newton himself was specially investigating the subject of rheumatism, in which the value of efficient tonsillectomy is becoming widely recognised, particularly in reducing the liability to cardiac complications.

There seems to be a large number of delicate children in Coventry, and it is a sign of the sound sense of the city that the residential camp at Corley is being rebuilt, with accommodation for 90 instead of 30 children. Another indication of the wisdom of this authority is given by the fact that the school for mentally deficient children, which is doing excellent work, was established as far back as 1910.

The report of the school dentists alludes to the harm done to the teeth by soft food and fermenting carbohydrates which adhere to the teeth and gums. As to the causation of dental caries, there are several different schools of thought, one regarding as the essential cause the lack of vitamin D in the diet, and another blaming especially oral sepsis, and advocating mouth-washes, toothbrush drill, and the like. A third is that cited here, in favour of which there was striking evidence in the Birmingham report for 1925, where there is a comparison of the conditions of the teeth of the children in Birmingham with those in New Zealand. Those in the Dominion were immensely worse, although the standards of diet and of general hygiene are much better, the determining factor being apparently the larger amount of sweets and biscuits eaten there, causing the carbohydrate fermentation alluded to by the Coventry dentists, Messrs. Raeside and Shelvin, who would, however, of course, agree that the right idea of prophylaxis against dental caries is to use every method and to interpret the terms correct diet and oral hygiene in the broadest possible sense.

Scarborough.

Dr. S. F. Linton describes the coördination of school and general public health work appropriate for a small area such as Scarborough. Child welfare work is carried out on the premises of the school clinic by the assistant school medical officer, Dr. Annie Roxburgh. Debilitated children under school age continue under the care of the centre and the health visitors until they come to school, when they are transferred to the school medical service. As records are kept of all cases continuity of work is maintained. It is much to be regretted that in the interest of "economy" the nursery school has been closed.

There seems to have been a great improvement in the cleanliness of the school-children of the borough, but ringworm causes much trouble and loss of school attendance. Dr. Linton, for example, cites the case of a child who has been kept out of school for two years. He wonders whether it would not be justifiable to allow such children to remain at school provided that they wear linen caps. Other authorities have found that infection is limited if under such a cap the scalp is covered with a thick greasy ointment, but a far better method is the use of X rays, which reduce the period of exclusion to two or three weeks. There are no special schools in Scarborough. There is less need for an open-air school in Scarborough, Dr. Linton thinks, than in a dense industrial centre. A special class is provided for the dull and backward, including many feeble-minded children, and the opening of the Orthopædic Hospital at Kirbymoorside has marked an advance in the treatment of cripples, for it affords institutional and specialist treatment. Apart from this, Dr. Crockatt, the orthopædic surgeon, holds a monthly clinic at the local hospital, where a masseuse attends and gives instruction to parents.

MENTAL HOSPITAL REPORTS.

THE *Cumberland and Westmorland Mental Hospital* had 815 patients resident at the end of the year. There has been a marked diminution in the male admission since the war, and those sent in are nearly all incurable. The superintendent feels that this must reflect an unwillingness to certify in early stages, and regrets the necessity of having to refuse admission to those who are willing to enter the hospital without certification. The recovery-rate was 32·7 per cent. and the death-rate 6·7 per cent. The general health was good, except for influenza. Parole on the estate is allowed to 20 men but to none outside, and there are no open wards.

The *Glamorgan County Mental Hospital* at Bridgend reports an increase of 73 in its population, chiefly males. This is ascribed mainly to the lowered death-rate—8·6 per cent.—and the smaller number of relieved patients discharged. The number of men patients—1076—is a record and means overcrowding. The recovery-rate was 22·8 per cent. The number of deaths from tuberculosis has fallen from 31 to 14. Eighty post-mortem examinations were held. The general health was good and free from zymotic disease, apart from 84 cases of influenza. A dentist has been appointed to attend weekly. Parole is allowed beyond the estate to 9 men and to 85 more within the grounds, but to no women, and there are no open doors except in the convalescent villa. There is a small laboratory, and the visiting commissioners urge the appointment of a technical assistant, so that full use may be made of it. General paralytics have not been treated

by malaria as yet. Fourteen attendants and two nurses obtained their certificate in May.

The *City of Leicester Mental Hospital* at West Humberstone had 923 patients on its books on Dec. 31st, an increase of 33 during the year. So many reports speak of the urgent need for increased accommodation that it is interesting to find Dr. J. F. Dixon pleading, not for more beds in mental hospitals, but for decertification of a large proportion of their population, which might well be housed in special institutions for harmless and helpless dements. The ratio of Leicester "insane" to the city population is now 1 in 304; five years ago it was 1 in 355. The recovery-rate for the year was 44·2 per cent. and the death-rate 5·5 per cent. The cause of death was verified by autopsy in 82 per cent. of the cases. The general health in 1926 was good, except for some influenza. There were no cases of zymotic disease. Forty-eight per cent. of men patients and 37 per cent. of the women were on full or limited parole, and leave of absence was granted 1491 times to men and 1013 times to women. Seventy-seven per cent. of the patients were kept fully employed. Small parties of female patients went to the cinemas regularly and others for motor drives into the country. The farm and garden again yielded a substantial profit. A new laboratory assistant has been appointed and the pathological work has therefore been extended. Malarial inoculation therapy was tried for general paralytics; 3 out of 13 were discharged "recovered." Since 1924, when this treatment was first used, 19 per cent. of the cases treated have been discharged well, 15 per cent. improved mentally and physically, while 31 per cent. remain unimproved. An investigation into the incidence of syphilis in the chronic population of the hospital has been commenced. So far 15 per cent. of the men examined (201) have shown a positive Wassermann reaction. In the summer tinea marginata cruris was again troublesome on the male side. The visiting dentist supplies a report stating that he has treated 287 patients and inspected and passed 44 more. He remarks on the keenness of the nursing staff in carrying out the intensive course of dental hygiene which is of such importance in cleaning up a septic mouth. A complete list is given of all nurses and attendants who have obtained their M.P.A. certificate. The cricket team had a successful season.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED AUGUST 6TH, 1927.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 172 (last week 185); scarlet fever, 1234; diphtheria, 671; enteric fever, 73; pneumonia, 489; puerperal fever, 38; puerperal pyrexia, 73; cerebro-spinal fever, 9; acute poliomyelitis, 14; acute polioencephalitis, 1; encephalitis lethargica, 21; dysentery, 7; ophthalmia neonatorum, 104. There was no case of cholera, plague, or typhus fever notified during the week.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 3 (1) from enteric fever, 31 (1) from measles, 2 (0) from scarlet fever, 13 (3) from whooping-cough, 24 (5) from diphtheria, 45 (7) from diarrhœa and enteritis under two years, and 16 (6) from influenza. The figures in parentheses are those for London itself.

The number of stillbirths registered during the week was 241 in the great towns, including 42 in London.

REMUNERATION OF CORONERS.—The coroners of Cheshire districts have sent in an application to the county authorities for increased remuneration owing to additional work caused by the provisions of the Coroners Amendment Act, 1926, and the requirements of the Home Office.

Special Articles.

COMPULSORY TREATMENT OF VENEREAL DISEASE.

THE NEW SOUTH WALES PLAN.

THE report of the Director-General of Public Health in New South Wales for the year 1925 contains paragraphs on the working of the system of compulsory notification of venereal disease under the Venereal Disease Act of 1918 (No. 46 of the New South Wales Acts of 1918). Notification is by number, not by name; if, however, a patient fails to continue under treatment till cured the medical attendant is required to report the name and address to the Commissioner, who is a medical practitioner nominated for the purposes of the Act by the Governor of New South Wales. The patient is then informed of the penalties to which he is liable unless he resumes treatment. In practically all cases where a patient can be reached resumption of treatment follows; in only a few instances, observes the report, has it been found necessary to resort to prosecution. The grave difficulty of this process of following up defaulters—a difficulty mentioned also in the recent report of the Scottish Board of Health—is due to the large percentage of persons who give the doctor a false name or wrong address. In 1925 it was necessary to notify 955 persons in New South Wales for failure to continue treatment; of these no fewer than 538 (about 55 per cent.) could not be traced owing to a wrong name or false address; 241 resumed treatment; and 176 cases were under investigation at the end of the year.

In England we still seem to be far from compulsory notification of venereal disease, and, except in local examples such as the Bradford Corporation Act of 1925, there is an evident reluctance to make it a criminal offence to fail to notify or to omit to undergo treatment. It is nevertheless interesting to study the features of a far-reaching enactment like the Venereal Diseases Act of New South Wales. Power was given to the Governor to bring the Act into force in different areas and at different times; it is now in force everywhere in New South Wales. In forbidding the advertisement of remedies, and in insisting that treatment of venereal disease shall be by medical practitioners only, the Act corresponds with our own Venereal Disease Act of 1917. But in many ways it goes much further. Under Section 4 a person suffering from this form of disease must, within three days of becoming aware of his condition, consult a medical practitioner, to whom he must furnish his correct name, occupation, and address, and to whom he must submit himself for treatment. Disobedience of this section is punishable with a fine of £100 or imprisonment for three months. The section includes a special provision for professional secrecy in the following terms: "Any medical practitioner who, otherwise than in accordance with the provisions of this Act, communicates to any person or in any other way makes known any name or address so furnished to him shall be liable to a penalty not exceeding £100 and shall be deemed to be guilty of professionally infamous conduct." Under Section 9 the medical practitioner must notify the Commissioner on a prescribed form within a prescribed period; failure to do so involves a fine not exceeding £20 on the first occasion and not less than £20 or more than £100 on any subsequent occasion. Marriage by a venereal disease patient while knowingly in an infectious stage is an indictable offence punishable with the substantial penalty of £500 fine or five years' hard labour or both. In this connexion strict ideas of professional secrecy are disturbed in a manner which anticipates a passage in Lord Riddell's recent address. If the doctor has reason to believe that a

person suffering from venereal disease intends to contract a marriage, he may (after notifying the patient of his intention) inform the person whom he has reason to believe to be the other party, or he may inform the parent or guardian or the Commissioner. Such communication is absolutely privileged. In addition to this protection (which is contained in Section 12), Section 19 enacts that all proceedings under the Act are to be privileged, and Section 20 forbids the publication of reports of any such proceedings unless with the written authority of the Commissioner. Medical practitioners can give certificates of cure or freedom from disease; and here it would appear that some kind of protection for the certifying doctor was deemed necessary. Section 18 states that "No certificate, notice, or other communication, verbal or in writing, given by a medical practitioner for the purposes of this Act, bona fide and without negligence, that any person is suffering from venereal disease shall be made the ground of any legal proceedings civil or criminal." Practitioners in England, with recent experience of the heavy personal liability involved in certification under the Lunacy Acts, will notice the language of the New South Wales Act; this kind of protection may be somewhat illusory, since it is always possible to get a claim placed before a jury by imputing bad faith or negligence.

Other features of this very comprehensive Act may be mentioned briefly. As already indicated, patients must remain under treatment till they have received a certificate that they are cured or free from their disease. They must notify any change of address, and there is provision for change of medical attendant. Treatment must continue till cure is effected notwithstanding the fact that the patient has ceased to be liable to convey infection. The patient's name and address must be reported on failure to continue treatment. Patients (or, in the case of children, their parents or guardians) are to receive special medical warning of the nature of their disease and of the dangers of contagion. It is made an offence to work in a shop, factory, hotel, restaurant, &c., when suffering from venereal disease. To infect anyone knowingly is punishable with £100 fine or 12 months' imprisonment or both. Brothel-keepers commit an offence if they knowingly allow the presence of a female patient, and certificates of cure or freedom from disease are not to be used in relation to prostitution. Departmental regulations can be made for various purposes such as the treatment and examination of patients and the supply of drugs. While the New South Wales Act is by no means unique, it is a useful type for those who would like to frame a common measure for adoption by international convention. In this respect the record of its actual working is particularly valuable. Should such legislation become universal, the old professional ideals of secrecy would become impossible; but the doctor's duty or power to disclose confidential information is naturally a very different matter when a new range of criminal offences is introduced in relation to treatment for venereal disease. Such new legislation would extend the occasions on which a doctor, like any other citizen, may feel obliged to warn the proper authorities that a crime has been, or is about to be, committed. Nevertheless, it would seem desirable that a patient should be able to obtain and rely upon a specific assurance that, so long as he followed the prescribed treatment, secrecy would be absolute; at the same time he should be specifically warned that if he failed to continue his treatment, or if he did not do his best to facilitate his cure, the privilege of secrecy might be withdrawn.

LONDON FEVER HOSPITAL.—The total income of this hospital last year was £22,911, over £1600 less than last; and to meet the deficit the committee has had to increase the overdraft at the bank, which now amounts to £4600. There is an urgent need for reconstructing the old isolation block, but £10,000 would be required for this purpose. Patients' fees last year amounted to £14,748.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

The Mississippi Floods.

THE gigantic task of relieving the victims of the floods in the Mississippi Valley has now virtually ended and the American Red Cross has been able to close its local headquarters at New Orleans. More than half a million people have been helped by the Red Cross and coöperating agencies and subscriptions to the Relief Fund have amounted to over 16 million dollars. As the floods subsided, and the population was able to return, their health was with difficulty maintained. Inoculation against typhoid was done on a large scale, sewage disposal was regulated, water-supplies were purified, dead animals were buried with the help of seven tons of dynamite, and an active antimosquito campaign was started, in the course of which 2480 barrels of oil and 210,750 yards of mosquito netting were used. No serious outbreak of disease has been reported; indeed, it is said that morbidity this year has been below normal. The Red Cross has furnished returning refugees with two weeks' rations, live stock and poultry, and necessary household equipment, and has impressed on them the need for observing elementary principles of hygiene.

Typhoid Fever in Montreal.

For some time sanitarians in the United States have been aware that there was an epidemic of typhoid fever in Montreal, but in spite of repeated efforts it appeared to be impossible to get a full statement of the facts. Recently, however, with the permission of the Deputy Minister of Health of Canada, the Surgeon-General of the U.S. Public Health Service appointed a board of investigation. Their survey occupied the last half of the month of June and they have now reported. Apparently the Montreal epidemic began in February and went on intermittently until well into the summer. Between March 1st and June 28th there were 4755 cases of typhoid with 453 deaths. The board consider that it was due to infection of milk delivered by the Montreal Dairy Company. "The preponderance of evidence," they add, "is that a very considerable proportion of the infected milk was passed through and distributed from the plant without being subjected to pasteurisation treatment." The medical officer of health seems to have had his hands tied through lack of personnel, and although there are over 40 pasteurisation plants in the city there is only one person engaged to inspect them and he has had other duties besides. On the question of responsibility the board report as follows:—

> "Our definite impression is that the city health officer of Montreal has honestly and sincerely recognised his responsibilities during the epidemic and has done his best to render efficient service under most difficult and trying circumstances. It is evident that he should be given ample authority and adequate efficient personnel at once to cope effectively with the present typhoid situation and with other serious preventable disease situations which are likely under existing conditions to develop in Montreal in the future . . . . Since the epidemic began the city health forces have been augmented by the temporary detail of two sanitary engineers and one sanitary inspector from the provincial health department. This provincial force took charge of the milk plant and the creamery of the Montreal Dairy Co., Ltd., on May 21st and apparently has managed them since in a highly efficient manner."

The board go on to suggest that steps be taken to bring about "radical improvement in sanitary conditions under which milk and milk products are produced handled, or processed in the city of Montreal or at any other place in the Province of Quebec within a radius of 100 miles of the city of Montreal for export to the United States," and recommend that "such milk or milk products after reaching points to which shipped in this country and before being distributed to consumers be pasteurised or otherwise processed under official supervision so as to be rendered free from typhoid, tuberculosis, or any other infection

likely to endanger human health." As a result of the report the use of Montreal milk and cream on dining cars bound for the United States has been forbidden. New York City has placed an embargo on milk from Montreal and its vicinity, while the New York State Department has issued a warning that Montreal is not a comparatively safe resort for summer visitors.

The Drift to Big Towns.

A recent study by the Connecticut State Department of Health shows that 80 per cent. of towns with a population of less than 1000 are without medical practitioners, and in about one-third of the towns in the State there is no resident doctor. The problem is not confined to one State and has been receiving attention for some time. One solution which is often proposed is the establishment of health centres, with facilities for the practice of modern medical methods in the less densely populated areas.

RED CROSS WORK IN 1926.

REPORT OF THE JOINT COUNCIL.

THE seventh report of the Joint Council of the Order of St. John of Jerusalem and the British Red Cross Society, which has just been issued, covers the period from April 1st, 1926, to March 31st, 1927, and may be obtained from the offices of the Council at 19, Berkeley-street, London, W. 1. The work of the Council is distributed among committees specially set up to deal with medical services, auxiliary hospitals, emergency help, home service ambulance, tuberculosis, and hospital libraries. Report on the voluntary hospitals in Great Britain is reserved for separate publication in October. The present report, which covers the other branches of the Joint Council's work, records a gratifying revival of enthusiam for all its branches in most of the counties throughout the United Kingdom.

Auxiliary Hospitals.

The main work of this department consists in helping officers suffering from tuberculosis, making good the hospital stoppages during sanatorium treatment, and giving additional help in institutions where the grant paid by the Ministry of Pensions does not cover the fees. Assistance is also rendered in cases where the Ministry of Pensions considers treatment advisable but not absolutely essential. Applicants are finding it increasingly difficult to satisfy tribunals that their disability is due to war service, and the Council comes to the aid of cases in which immediate treatment is essential pending investigation of claims. Last year 44 officers were sent to winter abroad, 13 at Montana (Palace Hotel), 8 at San Remo (Sunny-Bank), 5 at Arosa (Sanatorium Altein), and individuals elsewhere. The Hospital for Officers at Brighton has now only 25 beds, mostly occupied by medical cases, a large proportion of them being duodenal ulcer. The average age of the 85 patients admitted to this hospital during the year was 45 years.

Home Ambulance Service.

This service is solving one of the country doctor's greatest difficulties by bringing serious cases of accident or disease rapidly to the spot where they can be most efficiently treated. Although ambulances to the value of more than £100,000 have been provided by the Joint Council, the responsibility for running, housing, and maintaining them and for raising funds is undertaken by voluntary workers, many of whom offer to tend the patients during the journey, whether by day or night. Arrangement is now being made for ambulances to work with the lifeboats, cars standing by ready to complete the work which lifeboats have begun. Another recent development is the mitigation of road accidents. Last year, it is recalled, 138,774 persons were killed or injured by vehicles on the highways, and the Ambulance Committee has accepted the task of coöperating with the police and the automobile associations in organising an efficient road service. The aim is to secure that one or more persons able and willing to give first-aid, and possessed of the necessary training and equipment, shall be within easy reach of the scene, wherever an accident happens, on any of the more frequented roads of the country. This will mean training sections in the smaller towns and villages to be linked up with the larger units. At some points first-aid boxes with bandages and dressings will be provided on busy roads, week-end patrols with splints and other equipment and, if necessary, tent or other shelter for injured persons at a convenient point. The total number of ambulance stations in the country equipped by the Committee is 326, not counting 50 ambulances affiliated to the service. A certain number have been released during the year by the municipalisation of the ambulance service in some of the larger towns.

Mobile X Ray Service.

This is a unit comprising a 16-inch induction coil outfit with mercury interrupter and rectifier run by an 8 kilowatt direct current dynamo off the 35 h.p. Fiat car engine and developing 125 volts with a maximum output of 70 ampères. The unit makes it possible to take any kind of X ray photograph of patients confined to bed. There is also a full-size radiographic couch available for work in the smaller hospitals in and around London. All the reports are made by a member of the Institute of Radiology.

Tuberculosis.

A grant of £2950 was made by the Tuberculosis Committee to the Factory in the Field, Leeds, where of the 92 men employed 62 are ex-Service pensioned tuberculous men. A grant of £3500 was also made to the Central Fund for the Welfare of Tuberculous Persons to establish a firewood factory in London to employ tuberculous pensioners; owing to unforeseen difficulties the factory has not so far paid its way. Scio House, Putney, continues to meet the need of a home for ex-officer tuberculous patients.

The Services.

ROYAL NAVAL VOLUNTEER RESERVE.

D. A. Imrie, late Temp. Surg., R.N., to be Surg.-Lt.
Surg.-Lt. F. E. Stabler to be Surg.

ROYAL ARMY MEDICAL CORPS.

Capt. H. R. L'Estrange, half-pay list, late R.A.M.C., on completion of a period of five years on the half-pay list, retires on retired pay on account of ill-health and is granted the rank of Maj.

Capts. F. A. L'Estrange (Prov.), W. G. D. McCall (Prov.), J. M. Macfie, and H. N. Stafford to be Majs.

To be Lts. on prob.: J. M. Quinlan, L. R. S. MacFarlane, M. F. N. Griffin, J. J. O'Dwyer, W. F. Lane, Temp. Lt. de Lisle Carey (and relinquishes the temp. rank of Lt.), Temp. Lt. H. A. Ferguson (and relinquishes the temp. rank of Lt.), J. H. Anderson, M. G. de L'Isle Sturm, and D. B. O'Sullivan-Beare.

Lts. J. M. Quinlan, L. R. S. MacFarlane, and J. H. Anderson are seconded.

Lt.-Col. H. W. Symons resigns his commn. and is granted the rank of Maj.

Capt. J. Cohen, from Hygiene Cos., to be Capt.

ARMY RESERVE OF OFFICERS.

Lt. C. W. Simpson, from R.A., Reg. Army Res. of Off., to be Lt.

ROYAL AIR FORCE.

C. Sempill de Segundo (Maj., R.A.M.C. (T.F.) (retd.)), is granted a temporary commission as Flight Lt.

The undermentioned officers are granted temporary commissions as Flying Officers on attachment to the Royal Air Force: Temp. Lt. A. P. McClare, Gen. List, Army (Dental Surgeon), and Temp. Lt. S. McC. Craig, Gen. List, Army (Dental Surgeon).

The undermentioned relinquish their temporary Royal Air Force commissions on return to Army duty: Flight Lts. A. Rhodes and N. F. Smith (Capts., Army Dental Corps).

INDIAN MEDICAL SERVICE.

Lt.-Col. E. E. Waters retires.

Correspondence.

"Audi alteram partem."

THE TOXÆMIA OF ACUTE INTESTINAL OBSTRUCTION.

To the Editor of THE LANCET.

SIR,—One of the most striking points brought out by Mr. Brockman's lecture, which you published last week, is the close relationship of this toxæmia with persistent vomiting. When vomiting is marked, whether in the experimental animal or in the human subject, the "toxæmia" is marked; when vomiting is not marked or is absent toxæmia is less evident or is absent. In a dog a (duodenal) "loop was entirely cut off from the rest of the gut whilst the blood and nerve-supply remained intact"; the continuity of the gut was assured; the animal "suffered no acute symptoms, neither did it vomit." In my view it suffered no acute symptoms, *because* it did not vomit. In the human subject the same relationship holds. Mr. Brockman cites the case of a man from whom he removed a gangrenous appendix. In the early hours of the fourth morning the patient was so ill that death appeared imminent; as the result of treatment (injection per rectum of human bile and morphia) the vomiting stopped and the patient improved. On the tenth day acute obstruction was diagnosed and a complete obstruction was found, though just before the operation the patient was smoking a cigarette, had a pulse of 70, and a soft abdomen. He felt so well as to be surprised at the request for a further operation, and apparently only hesitatingly gave consent. Are we to suppose that this man was not suffering from a toxæmia? If so, we must believe that acute intestinal obstruction per se causes no toxæmia.

I suppose every medical man of any experience has missed cases of intestinal obstruction because the signs were absent, especially the sign of persistent vomiting. Here is one:—

A few weeks ago I opened the abdomen of a young man whose state was undiagnosed. He had been "seedy" for four or five days before being sent into hospital; he had had a previous attack of colicky pains some three or four months before. When I saw him he was lying in bed looking pretty well, with a quiet pulse, no fever, moist tongue. The abdomen was generally and slightly distended. He had vomited but once or twice and was constipated. Complete obstruction by a Meckel's diverticulum was found. The lower ileum naturally was implicated. The gut immediately above the obstruction was enormously distended; it was as big as a man's forearm, was dark purple in colour; the peritoneum over it was fissured. It reminded me of the state of the uterus in cases of concealed accidental hæmorrhage. The patient died.

Here is another example, slightly different:—

A woman was admitted as a case of appendicitis with intestinal obstruction. A mass was present on the right side of the abdomen; the patient was very ill. Vomiting had been little marked. Eight or 12 inches of the lower ileum were black in colour, turgid in consistence, and stinking. At the base was a band which was the appendix; this long before had been inflamed and its tip become adherent to the base of the mesentery, a loop being formed through which a coil of gut had passed. The appendix and the gangrenous gut were excised; the cæcum was closed and the lower end of healthy ileum brought out on to the abdomen. Death on the table was expected, but according to the anæsthetist distinct improvement occurred with excision of the affected gut; the patient recovered and the wound healed by first intention. She awaits a second operation.

Clearly, in both of these cases obstruction had existed probably several days before the patients had been sent into hospital. In each the condition was undiagnosed or only recognised late, mainly because vomiting had not been marked, and with this the general condition of the patient had remained so good. Delay in the onset of persistent vomiting is a common feature of low obstruction; when obstruction is high—as when a duodenal loop is formed experimentally—vomiting occurs earlier, and the case is correspondingly more serious.

The use of bile as a rectal injection in cases of ileus has been urged before. Its modus operandi, as Mr. Brockman states, requires working out. The majority who use it seem to think it influences peristalsis, opening the bowels with passage of flatus. Whether it acts in this way; or, as Mr. Brockman seems to suggest, by affecting in some peculiar manner the mucosa in higher reaches of the gut after absorption; or whether the results obtained with it are merely coincidents, as your leading article supposes possible, further inquiry may show. The point to be stressed is this:

"In most cases after the first rectal injection of human bile the vomiting stops forthwith, and even if this is not the result at once it is very much diminished and an increase in the bile given will secure the desired result." (Brockman.)

That persistent vomiting can thoroughly upset people, and create a feeling and appearance of desperate illness, even in the absence of any intestinal disorder, is sufficiently evident. Thus, death from persistent sea-sickness—from the vomiting alone—has occurred. A comparable condition occasionally is seen in pregnancy; persistent vomiting in mid-pregnancy creates all the appearances of a grave toxæmia. That the vomiting is the cause of the toxæmia, not that a toxæmia precedes and causes the vomiting, was thrashed out in your correspondence columns in 1922. Stop the vomiting and you cure the patient. It is the same in intestinal obstruction.

But just as obstetricians (yet not all) impute the pernicious vomiting of pregnancy to a preceding toxæmia, so surgeons, basing their opinion on experimental work, impute the toxæmia of acute intestinal obstruction to absorption of poisons from the contents of the obstructed gut. But the evidence for this view is not beyond criticism—as in some part I have shown. Here is a further criticism. It has been argued that the pressure within the obstructed gut rises enormously, and that this favours absorption. But it is plain, if the pressure within the obstructed gut does rise to any great extent, and remains raised, that the capillaries in the intestinal wall will be correspondingly compressed and even occluded, and that the circulation through this part will be materially diminished or even stopped. That such occurs is common knowledge; it explains the changes in the gut and the growth of bacteria within the lumen. How then can poison from the contents of such a coil be absorbed? It is manifest that this argument is invalid. The evidence is that when the gut becomes obstructed fluid is poured into the lumen of the obstructed part, causing the distension of the gut and affording the material for the copious vomiting, and ultimately the dehydration of the patient. Apart from hepatic activity, by which nocuous bodies absorbed by the gut are rendered innocuous to the systemic blood—though the liver seems unable to destroy the products of intestinal gangrene—there is reason to think the poisons within the lumen formed in intestinal obstruction are not absorbed—that indeed, according to the site of the obstruction, they are to a large extent voided.

I am, Sir, yours faithfully,

R. H. PARAMORE, F.R.C.S. Eng.

Rugby, August 13th, 1927.

SINGER'S ORAL METHOD OF LIPIODOL INJECTION.

To the Editor of THE LANCET.

SIR,—The above method is so satisfactory that a brief description of it may be of interest to those by whom it has not yet been tried. If the patient's full coöperation can be obtained it involves little discomfort. On a recent visit to this country, Dr. J. J. Singer, of St. Louis, kindly came to the City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E., and demonstrated his method. We were impressed by its ease and simplicity, as well as

by the radiograms obtained. We have since tried the method with very satisfactory results.

The patient sits on a chair and leans towards the side to be injected, the head supported by his hand. A 20 c.cm. syringe is filled with well-warmed lipiodol. To the syringe is attached a smooth-ended cannula, length 10 cm., bore 3 mm. The tongue is protruded as far as possible. This is held as in laryngoscopy. The end of the cannula is placed over the base of the tongue between the uvula and the side of the pharynx. No part of the mouth must be touched. The oil is now injected slowly while the patient is encouraged to breathe deeply. No local anæsthetic is used, the only preparation needed is the usual test for iodine idiosyncrasy, and of course to empty, by posture, as far as possible the cavities in cases of bronchiectasis. Should the patient be found intolerant it is an easy matter to revert to the cricothyroid method. In one recent case, for example, the first drops of oil induced a violent paroxysm of coughing and the expectoration of large quantities of pus. Therefore the oral method was abandoned and the cricothyroid membrane method, with the usual injection of cocaine, used and no difficulty was experienced. The essentials of the oral method appear to be the full protrusion of the tongue producing closure of the œsophagus and deep inspirations throughout the whole proceeding.

The method is not suitable for young children or where a picture of the apex is desired.

We are, Sir, yours faithfully,

F. G. CHANDLER,
Physician;

W. BURTON WOOD,
Assistant Physician, City of London Chest Hospital, Victoria Park, E.

August 9th, 1927.

RED CELLS AND HÆMOGLOBIN NORMALS.

To the Editor of THE LANCET.

SIR,—I have read with interest the annotation on this subject in your issue of August 13th. The questions raised therein have to do with what may be called the physics of the blood. In this department of investigation the blood is to be regarded as a mixture of two constituents only, serum and hæmoglobin, in varying proportions, and no conclusions can pretend to accuracy which do not take into consideration in every equation the specific gravities of the blood, of the serum, and of the hæmoglobin. Given these data, which can be easily and accurately determined, and an adequate algebraical technique, a number of indisputable conclusions can be established and incorporated in a small table. A definition of "standard aqueous hæmoglobin" would be required, and a convention should be arrived at as to the number of the red cells that should be contained in one cubic millimetre of healthy blood. The number 5,000,000 is a very convenient one for purposes of calculation and for that reason, if for no other, should claim precedence. With the aid of this table any of the questions your article suggests can be easily answered as well as others of perhaps greater interest and importance.

I am, Sir, yours faithfully,

Bolton, Lancs, August 14th, 1927. B. DERHAM.

PALPATION IN EXAMINATION OF THE APPENDIX.

To the Editor of THE LANCET.

SIR,—Mr. J. W. Dowden, while discussing chronic appendicitis at the Section of Surgery of the B.M.A. annual meeting (THE LANCET, August 13th, p. 333), referred to the necessity for judicious palpation in order to ascertain the site of the main tenderness. In many cases it is of the greatest use to employ two hands, one of the two being the patient's right hand. The right hand of the examiner having been used lightly to touch over and around the suspected area is placed upon it, and the patient is instructed to press on the examiner's fingers with the right hand; instruction is given that if tenderness results the patient is causing it. Invariably a free and full palpation of the appendix results whether tenderness be elicited or not; the appendix may be grievously affected without the slightest tenderness, and in this contingency it is all the more completely palpated, especially if affected. Adjuvant to this method, and in order to make assurance doubly sure, deep palpation while the patient elevates the whole of the extended right lower limb, with the right knee rigid, can be readily practised. I have frequently found the successive use of the two methods to clear the issue and to enable a correct diagnosis to be made in cases deemed doubtful or difficult to diagnose.

I am, Sir, yours faithfully,

R. CUNNINGHAM AFFLECK.

Royal Medical Society, Edinburgh, August 12th, 1927.

ASTHMA AND ARTHRITIS IN ALTERNATION.

To the Editor of THE LANCET.

SIR,—Dr. Wigoder's report in your issue of August 13th of a case of alternating asthma and rheumatoid arthritis, leads me to give a brief account of a similar case under my care at present.

Miss N., aged 70 years, first developed asthma in 1918. The following year the asthma having been controlled by vaccine treatment, she developed acute infective arthritis, the metacarpo-phalangeal and knee-joints being those chiefly affected. During the onset of the arthritis the asthma completely cleared up. The arthritis was treated with rheumatism phylacogen (P. D. and Co.) and after a prolonged course involving large doses the pyrexia disappeared and all active trouble in the joints subsided. A short while after this, in 1921, the asthma again returned, and the two conditions have relapsed, although mildly, alternately ever since. I am now on the track of an intestinal organism, a non-lactose-fermenting bacillus, which I hope is the cause in some way of both conditions, and that a further course of autogenous vaccine from this source will arrest both conditions.

As your correspondent mentions the rarity of this condition I thought an account of this case would be of interest.—I am, Sir, yours faithfully,

HAROLD O. LONG.

Stormont-road, Highgate, N., August 13th, 1927.

OTITIS MEDIA FOLLOWING NASAL SYRINGING.

To the Editor of THE LANCET.

SIR,—I have recently met with two cases of acute otitis media which resulted from the using of a syringe for douching the nose.

A. B., a girl of 18 years. After an operation on the nose for right-sided ethmoiditis she was recommended to use a syringe for cleaning out her nose. Two weeks later she attended with a subacute otitis media on the right side. This subsided, fortunately without an operation, on altering the nasal treatment and discontinuing the use of the syringe for the nose.

C. D., a man of 20 years. He had been suffering for some months with ethmoiditis on both sides and this had become much worse lately. Under treatment his condition was improving until, unfortunately, he was told to use a syringe for his nose. When he was next seen about a week later he had acute suppurative otitis media in both ears, with the usual severe symptoms. His tympanic membranes were incised and the ear condition went no further. He was advised to use the syringe no more, and to sniff the lotion up his nose instead. He had no further ear trouble.

Cases such as these are of frequent occurrence. With an ordinary simple catarrhal condition of the nose, methods other than sniffing the lotion up the nose often lead to middle-ear infection, either acute or chronic. Sniffing up a nasal douche creates a negative pressure in the nose and postnasal space, so that any infected material tends to be aspirated from the region of the Eustachian tubes. In

syringing, on the other hand, fluid is forced into the nasal recesses, and the Eustachian tubes are facing in the direct line of fire. Also, with a glass boat the head is tilted back and fluid is swept over the Eustachian openings.

I am, Sir, yours faithfully,

C. HAMBLEN THOMAS, F.R.C.S. Eng.

Harley-street, W., August 9th, 1927.

Obituary.

HENRY HARVEY LITTLEJOHN, M.B., B.Sc., F.R.C.S., F.R.S. Ed.,

REGIUS PROFESSOR OF FORENSIC MEDICINE, UNIVERSITY OF EDINBURGH.

WE regret to announce the death of Prof. Harvey Littlejohn, Professor of Forensic Medicine in the University of Edinburgh, which occurred on Tuesday last in a nursing-home in Edinburgh. He had been in delicate health for some time.

Henry Harvey Littlejohn was the only son of Sir Henry Duncan Littlejohn, who preceded his son as Professor of Forensic Medicine in the University of Edinburgh, and who was President of the Royal College of Surgeons of Edinburgh and medical officer of health for the city. Harvey Littlejohn was born in 1862 and received his medical education at Edinburgh University, where he graduated in medicine in 1886, taking later the B.Sc. and the F.R.C.S. Edin. After qualification he studied in Vienna and Berlin, and early manifested an intention to follow in his father's footsteps, for after holding posts at the Fountain Bridge Dispensary and the Royal Maternity Hospital at Edinburgh, where he worked under Sir Halliday Croom, he became medical officer of health for Sheffield. He held this post for six years, and returned to Edinburgh in 1897 to take up his appointment as Lecturer on Medical Jurisprudence and Public Health in the Edinburgh School of Medicine. He came to this post with considerable experience of its requirements, as, before proceeding to Sheffield, he had assisted his father in his departments along many lines of analogous work. In 1906 he was appointed Professor of Forensic Medicine upon his father's retirement, and he occupied the chair until his death.

During 21 years of administrative work Harvey Littlejohn gained a high reputation as a wise and tactful administrator and a learned medical jurist. His outlook on forensic medicine generally can be gathered by reading his book on the subject, which is not an ordinary text-book, but rather a well-catalogued medico-legal museum, containing admirable illustrations of post-mortem conditions in the circumstances attendant upon murderous attacks, serious accidents, and infanticide. The full descriptions attached to the pictures has made the book of great value to students and also to practitioners when called upon to study the medico-legal aspect of cases occurring in practice. His analytical method of approaching difficult subjects was well illustrated in all his writings. In a paper which he read before the Medico-Legal Society some three years ago on the subject of judicial hanging, he explained what the actual lesion to be arrived at is, how the "drop" is adjusted towards this end, and with whom the responsibility rests for the length of the "drop" and the situation of the knot; and he excelled in making similar controversial subjects clear, as he showed frequently when giving expert evidence in criminal cases. Other written works displaying the same power of imparting sound teaching and information in a simple way are a report on "Ten Years' Notification of Infectious Diseases in Edinburgh," an essay on "The Causes and Prevention of Smoke," and the health reports dealing with the city of Sheffield over the period of his office there.

At the International Medical Congress, held in London in 1913, Littlejohn was President of the Section of Forensic Medicine, a recognition of his status which was well merited. At the time of his death he was President of the Medico-Legal Society and the representative of Edinburgh University on the General Medical Council. In all his public work he impressed his colleagues with his capacity and judgment, while his fascinating personality had gained for him a large circle of private friends.

WILLIAM ALEXANDER MACKAY, M.D., F.R.C.S. Edin.

Dr. W. A. Mackay, of Huelva, Spain, who recently died in Ross-shire, was the youngest surviving son of the Rev. John Mackay, of Lybster, in Caithness. Educated at the Royal High School of Edinburgh and at the University, he graduated in medicine in 1883, and immediately went to Spain to assist his brother, the late Dr. John Mackay, who was chief medical officer to the Rio Tinto Copper Company. His surgical skill very early became evident, his reputation grew, and he was soon appointed consulting surgeon to the company, a post he held till his retirement in 1926. In 1889 he presented an M.D. thesis at Edinburgh on his results in abdominal, pelvic, and urinary surgery, and on reading it Mr. Lawson Tait at once became his sponsor for election to the British Gynæcological Society. In the same year Dr. Mackay became a Fellow of the Royal College of Surgeons of Edinburgh. A prize essay on lithotomy and lithotrity made him a corresponding member of the Royal Academy of Medicine and Surgery of Spain. Some years later he was awarded the Military Cross for services rendered to the Spanish Civil Guard.

In 1903 Dr. Mackay was joined in partnership by Dr. Ian Macdonald, and 20 years later the town of Huelva conferred on them its freedom in recognition of their united work in practice and publication; the street leading to their clinic now bears their names. When Dr. Mackay went to Spain specialism was unknown, and thus the field of his activities always remained wide. "As a surgeon," writes a medical friend, "he was endowed with the essential qualities of serenity and judgment. In his earlier years he operated dexterously for cataract, but gradually his work besides general surgery became more concentrated on the abdomen and pelvis, where as a diagnostician he was rarely in error. He was also a particularly safe and rapid operator in vesical and urethral lesions. He was an expert accoucheur, too, for he always seemed to judge rightly the time for instrumental assistance to the patient."

His surgical skill was well known in Spain beyond Andalusia, but apart from his professional prestige he won a unique position in the town where he worked for 40 years. His charm of manner, his innate sympathy with the people, his generosity to the poor enthroned him in their affections, and among the many tributes paid at his death one ended thus: "Great in his sphere, our town mourns its benefactor, but the memory of our adopted son endures." For Dr. Mackay was a man of wide interests, active, speculative, and poetic, and was well read in the literature of Spain. He was a staunch president of the Huelva Athletic Club for many years, and on the day of his funeral in Ross-shire, the teams and spectators before a match at Huelva bared heads to his memory. He was a keen cricketer and golfer and a good shot, and he never lost his boyhood's love for fishing.

Dr. Mackay leaves a widow, two sons, and two daughters.

THE LATE DR. A. W. WOODROFFE.—Dr. Augustus Warren Woodroffe, who died recently at Ticehurst, Sussex, had practised in the neighbourhood for more than 30 years. Educated at Trinity College, Dublin, he graduated in 1881 and proceeded to the M.D. degree five years later. He was for a time medical resident at the City of Dublin Hospital and house surgeon at the Peterborough General Hospital. He held a number of appointments in the Ticehurst district and took a great interest in the life of the parish. He had been in poor health for two years but was at work on the day he died.

Medical News.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—From August 29th to Sept. 10th, at the Queen Mary's Hospital, Stratford, there will be an all-day course in medicine, surgery, and the specialties. The whole practice of the hospital will be open to those enrolling. (Fee, £3 3s. or £2 2s. for either week.) At the Bethlem Royal Hospital there will be two lecture-demonstrations bi-weekly from Sept. 6th to Oct. 1st. (Fee £1 1s.) From Sept. 12th to Oct. 1st the Royal Westminster Ophthalmic Hospital will hold a course in which clinical instruction will be given daily at 2 P.M., followed by operations at 3 P.M., and special demonstrations three times a week at 5 P.M. (Fee £1 4s.) Also beginning on the 12th, the Queen's Hospital will hold a two weeks' all-day course. (Fee £3 3s.) This hospital specialises in the showing of cases rather than on lectures. From Sept. 19th to Oct. 1st a course in orthopædics has been arranged by the Royal National Orthopædic Hospital. Lecture-demonstrations will be given daily and the entire practice of the hospital will be open to entrants. A special visit will be made to Brockley Hill Country Hospital on one of the Saturdays. A two weeks' course in medicine, surgery, and the specialties will be held from Sept. 19th to Oct. 1st at the Westminster Hospital. There will be facilities for visiting associated mental institutions. This course and that of the Queen Mary's Hospital are suited to those who wish to refresh their knowledge of hospital methods. Copies of all syllabuses and of the general course of instruction provided at the associated hospitals, and also of the *Post-Graduate Medical Journal* (annual subscription, 6s. post free), may be had from the Secretary of the Fellowship at 1, Wimpole-street, London, W. 1.

CREMATION OF STILLBORN CHILDREN.—It is understood to be the practice in some maternity institutions to dispose of the remains of stillborn children by incineration on the premises. In order to remove any misapprehension the Minister of Health has drawn the attention of local supervising authorities to regulations which forbid the cremation of human remains except in recognised crematoriums.

BRITISH SOCIAL HYGIENE COUNCIL.—The executive of the British Social Hygiene Council has just concluded its annual summer school at Oxford, when a large number of delegates attended, representing scholastic, religious, social, and medical interests in various parts of the Empire. Prof. J. Arthur Thompson contributed a series of five lectures on the Biological Aspects of Modern Sociological Activities, Dr. J. R. Rees expounded the contributions of psychology to the practical problems of sex education, while Mr. Z. F. Willis discussed some of the problems of adolescence. Other workers dealt with the means of surmounting special difficulties in the work of eliminating venereal disease. Next year's summer school will be held at Cambridge in the last week of July.

THE LATE DR. E. A. WILLIAMS.—The funeral took place at Chester on August 9th of Dr. Edward Albert Williams, who died in London on August 5th. Educated at the King's School, Chester, he studied medicine at Edinburgh and at St. Thomas's Hospital, London, qualifying as L.R.C.P. Edin. in 1906. He took the D.P.H. at Liverpool in 1910, and before settling for a time in practice at Prestatyn was resident surgical officer at Salford Royal Hospital, and school medical officer under the Liverpool Education Committee. During the war he held a captain's commission in the Royal Army Medical Corps, later serving with the Army of Occupation on the Rhine. On being demobilised he took up bacteriological and radiological work in Paris.

THE LATE DR. H. D. LAWSON.—At the age of 32 Dr. Henry Dillon Lawson died on August 4th at the London Hospital, where he had received his medical education. He was the elder son of the late Dr. H. A. W. Lawson, of Stratford, and joined the army in 1916, serving with a commission in France. He was twice mentioned in despatches, but shortly before the end of the war was recalled to continue his medical studies at the London Hospital. Qualifying as M.R.C.S. Eng. in 1922 he was appointed house surgeon at Torbay General Hospital, but later returned to the London Hospital, where he was at first clinical assistant in the surgical out-patients' department, and later house physician. His next appointment was to Hanwell Mental Hospital, and after six months' residence there he worked as an assistant in practice at Wadhurst, and then at Shere in Surrey. A memorial service was held at Shere on the day of the funeral.

A CONVALESCENT HOME TO BE CLOSED.—Queen Mary's Hospital for the East End has reluctantly decided to close its Children's Convalescent Home next spring owing to lack of financial support. The proceeds from the sale of the home will be devoted to the establishment of a Queen Mary's Hospital Convalescent Home Fund, and children will thus be sent to various convalescent homes. The King Edward VII. Hospital Fund for London has made a grant towards the new wing of the hospital, which is to contain beds for casualties. During the year 3039 in-patients were treated.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, August 22nd.—10 A.M., Dr. Dowling: Skin Dept. 2 P.M., Mr. Addison: Surgical Wards. 2 P.M., Dr. Ironside: Medical Out-patient Dept.

TUESDAY.—11 A.M., Mr. Endean: Demonstration of Venereal Cases. 2 P.M., Dr. Shaw: Medical Out-patients. 2 P.M., Mr. Hamblen Thomas: Throat, Nose and Ear Dept.

WEDNESDAY.—2 P.M., Mr. Tyrrell Gray: Operations. 2 P.M., Dr. Scott Pinchin: Medical Out-patients. 2 P.M., Mr. Gibb: Eye Dept.

THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Dept. 11 A.M., Mr. Simmonds: Orthopædic Dept. 3 P.M., Sir Henry Simson: Gynæcological Wards.

FRIDAY.—11 A.M., Dr. McDougal: Electrical Dept. 11 A.M., Dr. Pritchard: Modern Methods in Medicine.

SATURDAY.—10 A.M., Children's Out-patient Dept., Bacterial Therapy Dept.

Operations, Medical, Surgical, and Special Out-patient Departments, daily, 10 A.M. to 5 P.M. Saturdays, 10 A.M. to 1 P.M.

Appointments.

Surgeons under the Factory and Workshop Acts: CHERRY, D. S., M.B., Ch.B. Edin. (Kilbernie, Ayr); WOOD, W. L. R. L.R.C.P. Lond., M.R.C.S. (Ossett, W. Riding).

Manchester Royal Infirmary: ARSTALL, H., M.B., Ch.B. Vict., METCALFE, G., M.B., Ch.B. Vict., KITSON, J. H., M.B., Ch.B. Vict., M.R.C.S., L.R.C.P., HANCOCK, A., M.B., Ch.B. Vict., Resident House Physicians; BARNES, R. H., M.B. Ch.B. Vict., BAKER, A. H., M.B., Ch.B. Vict., NEWTON, R., M.B., Ch.B. Vict., BRENNAN, H. J., M.B., Ch.B. Vict., KEDDIE, J. T. C., M.B., Ch.B. Vict., KILROE, H.B., M.B., Ch.B. Vict., WADDY, F. F., M.B., Ch.B. Vict., Resident House Surgeons; TOWNLEY, H., L.D.S., M.B., Ch.B. Vict., Assistant Surgical Officer, Dental Department.

Vacancies.

For further information refer to the advertisement columns.

Aberystwyth Infirmary, &c.—H.S. £200.
Bangor, Carnarvonshire and Anglesey Infirmary.—H.S. £200.
Bath, Royal Mineral Water Hospital.—Phys.
Bedford County Hospital.—Asst. H.S. At rate of £130.
Birmingham City.—M.O.H. £1800.
Birmingham, General Hospital.—Med. Reg. and Res. M.O. £155.
Birmingham University.—Lecturer in Physiological Dept. £600.
Bootle Borough Hospital.—Sen. M.O. and two Jun. M.O.'s. At rate of £150 and £125 respectively.
Bristol General Hospital.—H.P.'s, H.S.'s, Res. Obstet. O., and Cas. H.S. Each at rate of £80.
Bristol, Royal Infirmary.—H.P.'s, H.S.'s., &c. Each at rate of £80.
Cardiff, King Edward VII. Welsh Nat. Mem. Assoc.—Area Tub. P. £696. Also Asst. Res. M.O., for North Wales. Sanat. £200.
Cheshire Joint Sanatorium, Market Drayton, Salop.—H.P. £250.

City of London Maternity Hospital, City road, E.C.—Registrar. £100. Also Asst. Res. M.O. At rate of £80.

Coventry and Warwickshire Hospital.—Two Res. H.S.'s. Each £125.

Dorchester, Dorset County Hospital.—H.S. £120.

Dumfries, Crichton Royal Mental Hospital.—Clin. Pathologist. £400.

East African Medical Service.—Asst. Bacteriologist. £600.

Exeter, Royal Devon and Exeter Hospital.—H.S. At rate of £130.

Halifax Royal Infirmary.—Res. Surg. O. £250.

His Majesty's Indian Medical Service.—Permanent Commissions.

Hove Hospital, Sackville road.—Res. M.O. £150.

Jewish Maternity Hospital, Underwood-street, E.—Hon. Asst. Obstet. S.

Leamington Spa, Warneford General Hospital.— H.P. £150.

Leicester Royal Infirmary.—H.P. and H.S. Each at rate of £125.

Lincoln City.—Asst. M.O., &c. £600.

Liverpool, Alder Hey Children's Hospital, West Derby.—Res. Asst. M.O. £200.

Liverpool, Eye and Ear Infirmary.—Hon. Asst. S.

Liverpool Royal Children's Hospital.—Two Res. H.P.'s., two Res. H.S.'s. Each at rate of £60. Res. Cas. O. and Res. M.O. Each at rate of £120.

London Lock Hospital, 91, Dean-street, W.—H.S. At rate of £200. Also Surg. Reg. £100.

London Lock Hospital, 283, Harrow-road, W.—H.S. At rate of £150.

London Temperance Hospital, Hampstead-road, N.W.—Hon. Anæsthetist.

Miller General Hospital for South-East London, Greenwich-road, S.E.—Res. M.O. £250.

Newcastle-upon-Tyne, University of Durham, College of Medicine. Prof. of Anatomy.

Preston and County of Lancaster, Queen Victoria Royal Infirmary. H.S. £150.

Queen Charlotte's Maternity Hospital, Marylebone road, N.W.—Asst. Res. M.O. Also Dist. Res. M.O. Each at rate of £80.

Richmond, Surrey, Royal Hospital.—Asst. H.S. At rate of £100.

Rochester, Kent, St. Bartholomew's Hospital.—H.P. At rate of £175.

Royal Free Hospital, Gray's Inn-road, W.C.—H.P.

Royal Waterloo Hospital for Children and Women, Waterloo road, S.E.—Non. Res. Cas. O. £150.

Salisbury, General Infirmary.—H.S. £150.

Sheffield Royal Hospital.—Sen. Cas. O. £150.

Tiree, Parish of, Argyllshire.—M.O. £170.

West Bromwich and District General Hospital.—H.P. and Cas. H.S. £200.

West London Hospital, Hammersmith-road, W.—H.P. and two H.S.'s. Each at rate of £100.

Woolwich and District War Memorial Hospital, Shooters Hill. Hon. Obstet. S. Also two Hon. Anæsthetists. £50 guineas. Sen. H.S. £125. Jun. H.S. £100.

The Secretary of State for the Home Department announces a vacancy for a Medical Referee under the Workmen's Compensation Act for the Sheriffdom of Lanark. Applications should reach the Private Secretary, Scottish Office, Whitehall, London, S.W. 1, not later than September 3rd.

Births, Marriages, and Deaths.

BIRTHS.

HANSON.—On August 8th, at New King's-road, Hurlingham, S.W., the wife of David C. Hanson, M.C., M.B., of a daughter.

MARRIAGES.

BLACK-MILNE—BENNETT.—On August 8th, at Bournemouth, James Black-Milne, M.D., to Harriet, widow of Arthur Edward Bennett, of Tolles-road, Leicester.

BOURNE—COTONIO.—On August 3rd, at New Orleans, Geoffrey Bourne, M.D., M.R.C.P., to Margherita Cotonio, Ph.D., daughter of Mr. and Mrs. Cotonio, of New Orleans, U.S.A.

DAVIES—BROWN.—On August 9th, at the Friends' Meeting House, Luton, Vyvyan Jeremy Davies, M.R.C.S., L.R.C.P., Swansea, to Margaret Hughes Brown, M.B., B.S., of "Fairholme," Luton.

DONALD—WALKER.—On August 8th, at King's College Chapel, Aberdeen, Charles Donald, F.R.C.S., to Amy Stewart, only daughter of the late Andrew Walker and of Mrs. Walker, Ashley-gardens, Aberdeen.

DEATHS.

CARLÉ.—On August 10th, Frederick Charles Carlé, M.B. Lond., M.R.C.S., L.R.C.P., of "Wayside," West Byfleet, aged 51.

HAMILTON.—On August 9th, at Fenham Hall-drive, Newcastle-on-Tyne, John Hamilton, L.R.F.P.S.G., L.R.C.P.E.

ROUTCH.—On July 18th, at Sermione, Lake Garda, Italy, suddenly, Dr. Frederick Augustus Routch, of Mount Pleasant, Tunbridge Wells, aged 59.

SYMS.—At Selsey, on Aug. 13th, John Kendall Syms, M.R.C.S., L.R.C.P., of Shifnal, aged 51 years.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

THE HISTORY OF ANGINA PECTORIS: HEBERDEN OR ROUGNON?

BY PROF. HANS KOHN,
LIBRARIAN TO THE BERLIN MEDICAL SOCIETY.

FOR more than a hundred years there has been controversy as to whether Heberden or Rougnon was the first to notice and describe angina pectoris.

English writers of former times made short work of it. Gairdner, for instance, described the claims made for Rougnon as "an afterthought," and from Gibson they could elicit but "a smile." But more recent authors have taken the matter more seriously. No less a man than Sir William Osler plainly conceded to Rougnon a priority of some months because his patient had the characteristic symptoms of angina—pain and sudden death after emotion. And Sir Clifford Allbutt says in his admirable work, "Diseases of the Arteries including Angina Pectoris": "It is fair to say that although Heberden named the disease and gave by far the better description of it, yet the *first* precise discernment and description of it was in a letter by Rougnon to Lorry . . . ." (The italics are mine.) To reach a definite conclusion on the facts seemed to me an act of historical justice. And as my solution is based on the entire literature and is unreservedly in the great British doctor's favour, it may be that a summary of my conclusions will interest English colleagues. They are published in detail elsewhere.[1]

Rougnon's Case.

Close study of Rougnon's little book "Lettre à M. Lorry, etc.," in my opinion leaves hardly any room for doubt that Rougnon's patient did not suffer from angina pectoris at all; according to my view of the symptoms and the post-mortem findings, he had emphysema of the lungs leading to gross dilatation of the heart and venous congestion. When moving he complained of "difficulté de respirer," little by little increasing to attacks of "suffocation" or "oppression" when walking a little hastily or when talking during this exertion. Six weeks before death he complained during attacks of "une gêne singulière sur toute la partie antérieure de la poitrine en forme de plastron." Pain is nowhere mentioned in the actual history of the case, though it is true that later, in analysing the symptoms singly, Rougnon once employs the word; the patient had in his attacks no palpitation but only "une douleur gravative dans la région du cœur." Rougnon makes use of the expression only occasionally, and—which must not be overlooked—lays no stress on this decisive symptom. By this "douleur," I feel, he understands nothing beyond the "gêne singulière," meaning, I am sure, the quite familiar feeling of tightness and even dull pain felt in walking by patients suffering from severe dilatation of the heart; this is a sensation quite different from the substernal oppression or excruciating and irradiating pain of angina pectoris. Even Baumes, the very discoverer of Rougnon, was obviously of my opinion when saying: "Quoiqu'il ne ressentit aucune douleur dans la poitrine, etc."

It is true there is very occasionally angina sine dolore (Gairdner), but in a case which is supposed to introduce a new disease the rule is to be expected, and not the exception. Moreover, although sudden death *can* be a symptom of angina pectoris, such an ending is not at all uncommon, after hastily running upstairs, in patients with such enormous dilatation of the heart as the autopsy revealed.

Recognition of a New Clinical Entity.

Even if Rougnon's patient had angina pectoris, besides his emphysema and cardiac dilatation, it is beyond all doubt that Rougnon did not recognise it; he saw in his case nothing but a grave dyspnœa. Thus he added in no way anything to our knowledge of angina pectoris. There were mere descriptions of cases of angina pectoris—and even far more complete ones than his—long before Rougnon (Willis, Ballonius, Lancisi, Poterius, F. Hoffmann, Morgagni, not to speak of incomplete histories from oldest times); also there was an account of post-mortem findings and a very clever explanation by Morgagni, and even an abstract conception of the disease, in classical form, by Bartoletti (1628). All these writers, however, including Bartoletti (Morgagni renounces classification) saw only dyspnœa in their cases, just as Rougnon did, and Heberden's immortal merit lies in his having picked out and entirely separated angina pectoris from the, at that time, all-dominating dyspnœa. Realisation, consciousness of the new, is the necessary condition of every claim to discovery and priority.

[1] Zeitschrift für klinische Medicin, vol. cvi., 1927.

Science, according to Claude Bernard, does not consist of facts but of conclusions drawn from them.

For the fact that Rougnon did not recognise the disease to which Heberden gave the name angina pectoris, I found two further striking proofs. In 1788 he published his great book "Considerationes Pathologico-semeioticae de Omnibus Humani Corporis Functionibus," and in this work (fasc ii., p. 25) he enumerates "dolor pectoris gravativus et obscurus, quandoque extensus ad axillas ubi praesertim saevit"—this most conspicious sign of angina pectoris—as the first symptom of asthma (i.e., bronchial asthma). Again, under "crepatura cordis" (ib. fasc i., p. 8), he cites a definite and characteristic case of angina pectoris ("hic autem a longo tempore conquerebatur de singulari dolore sub sterno quamvis de caetero sanus videretur"), ending in sudden death after rupture of a coronary artery, without making the slightest allusion to any relation existing between this case and his own described 20 years before.

Rougnon's contemporaries, and all the authors till 1808, obviously did not notice a resemblance between Rougnon's case and Heberden's disease. Only by this assumption can we explain why from its appearance in 1768 nobody took any notice of Rougnon's work until 1808, notwithstanding the fact that it was flatteringly announced in the largely read *Journal des Sçavans* of July, 1768, where the reviewer saw novelty not in the disease described but only in Rougnon's explanation—ossification of rib cartilages as the cause of the disorder and sudden death. It is unnecessary to enumerate all the other writers who passed over Rougnon's work with silence, but one of them should be mentioned—namely, P. C. Marchant, Rougnon's pupil and, as it seems, friend. In Marchant's obituary notice of Rougnon (1799) all Rougnon's works are named, singly or in groups, but nothing is said of the famous "lettre" and nothing of Rougnon's part in the discovery of angina pectoris, a disease at that time in the very foreground of clinical interest. All this shows that Gairdner is right in calling all the claims in Rougnon's favour an afterthought.

The Source of Error.

Rougnon's consciousness of having discovered a new disorder is sometimes inferred from the title of his work, often cited as "Lettre . . . . sur une Maladie Nouvelle." Even Sir William Osler, one of the few who had the rare book in hand, cites it thus. Yet I can say with assurance that this title never existed. I was enabled to examine the two copies that Osler had; they bear the title: "Lettre de M. Rougnon, Professeur en Médecine en l'Université de Besançon, etc., à M. Lorry, Docteur-Régent de la Faculté de Médecine de Paris, touchant les causes de la mort de feu Monsieur Charles, ancien Capitaine de Cavalerie, arrivée à Besançon, le 23 Février 1768. A Besançon, De l'Imprimerie de J. F. Charmet. MDCCLXVIII." There is nothing of "une maladie nouvelle." The title of three other copies I could examine is just the same, and I suppose there are no more existing copies anywhere. Baumes gave the right title; Desportes and Jurine, the next writers abbreviated it to "Lettre à Lorry," and this seems to have been too devoid of substance to Pinel and Bricheteau, causing them to add "sur une maladie nouvelle." (Pinel and Bricheteau admitted that they had not themselves seen the book.) This is the source of error.

Conclusion.

To sum up: in my opinion and that of Gairdner Rougnon's patient did not have angina pectoris at all. Supposing, however, that it was a case of angina, Rougnon's description was by no means the first. Furthermore, although he described *a case*, he failed to see anything else in it beyond dyspnœa. Heberden, on the contrary, did not describe one case but conceived from 20 cases, by ingenious intuition, the *abstract picture* of the disease. He drew its features in such a way as to leave little for later clinicians to add; he penetrated deeply into the pathogenesis of the condition, giving an explanation (spasm, although not determining its seat) subsequently more and more confirmed; he laid down the prognosis; and in the form of opium, he gave antispasmodic treatment which to-day is still regarded as the essential.

Is there any possibility of doubt as to whom priority is due?

EARLY BOOKS ON MEDICINE.

FROM Lugano there reaches us the second part (E–L) of the catalogue of "Early Books on Medicine, Natural Sciences, and Alchemy," issued by L'Art Ancien S.A., dealers in rare books. Lugano is a tri-lingual centre in touch with the forgotten hill-top libraries of Italy and the monasteries of the Near East, from which many of the treasures here offered must at various times have been drawn. One of the most curious is the "Tacuini sex rerum non naturalium" of Elimithar, the Arabic savant, published at Strassburg by Schott, the printer, in 1533. The book is notable for its delicate woodcuts by Hans Weiditz, illustrating, among other things, the appearance of plants with a signaturist significance. Some seeds or nuts are representative of brains, testicles, the heart, and so forth, and from them were derived medicines destined to cure the diseases of those organs in man. In the same folio, bound in old vellum and offered for 375 Swiss francs, is the companion work by Bengesla entitled "Tacuini Aegritudinum et Morborum," which is especially interesting for the delicate marginal woodcuts illustrative of the daily domestic life of the sixteenth century. These are also by Weiditz, who has drawn objects of daily use—tools, furniture, utensils, and costumes—still employed by the peasantries of central Europe. Very curious are the cuts representing the routine of bagnios and houses of ill-fame. The book is one of those discussed by Choulant in his well-known work on anatomical illustration. Sir Thomas Elyot's "Castel of Helth," printed in London by Thomas Berthelet in 1541, is the very rare early edition, here valued at fr. 1000. Elyot was a layman, but his learning was profound, and his book, though decried by the medical profession of his time, remained the popular medical text-book of the age of Henry VIII. and his Tudor successors. Two works by the Abbé Charles-Michel Epée on deaf-mutes are offered at moderate prices. These are his "Institution des Sourds et Muets par la voie des signes méthodiques," Paris, 1776, and "La véritable manière d'instruire les sourds et muets," Paris (Lyon), 1784. Epée was the founder of the first institute for the deaf and dumb in Paris in 1755, and was himself the immediate continuator of the work of Rodriguez Pereira.

Rare works by Eustachius, Fallopius, Fracastorius, and Galen also figure in this catalogue. "The Passionarius Galeni" of Gariopontus, published at Lyons in 1526, is particularly worthy of notice, the price being fr. 275. This once-famous work by the earliest Salernitan teacher is a compilation of translations from Græco-Byzantine authors, and is a compendium of early eleventh century knowledge of medicine. As many as five ancient editions of the "Hortus Sanitatis" are in the catalogue, as well as the curiously illustrated works of Ketham and the medical tractates of Lactantius, the Christian father Lancisi, Martin Lister, and many other famous physicians and surgeons.

ORANGES IN CHICAGO.

EVERY week the Chicago Department of Health publishes a bulletin, and a recent issue was devoted entirely to the subject of oranges. Full of that "pep" which "orange juice gives you," the leaflet on every page contains attractive sketches illustrating such truths as "oranges for heat and energy," "oranges for vigorous leadership," "oranges for dash and daring"—Colonel Lindberg chose to drink it at the end of his Transatlantic flight—and "orange juice is not fattening" (illustrated by a picture of a fashionable girl in a fashionable pose). Although there is an accurate statement of the value of oranges in the dietary, the untrained reader may well imagine that all he needs is oranges, oranges all the way, to set him up in health for ever. Accustomed, however, to these weekly exhortations, the Chicago citizen will doubtless take them with a pinch of salt, and it must be admitted that the pamphlet is more attractive than anything produced in this country as health propaganda. Dr. Herman Bundesen's weekly bulletin is an instructive example of American enterprise in "advertising health," and this is a specialty which is likely to receive increasing attention on this side of the Atlantic. Certainly the "eat more fruit" campaigners must be grateful to Chicago's Public Health Department.

MEMORIES OF WAR WORK.

THE title of an unpretending little book [1] is taken from the list of offices in the Church given in the first Epistle to the Corinthians, chap. xii. The object of its publication is primarily to make some money towards meeting the expenses of the Pelham Memorial Hall in the parish of Holy Trinity, Norwich, and secondarily to put on record the experiences of at least one of the army of mainly unknown workers who did their best when their country was in sore straits. Mrs. Bulstrode, in the early days of the war, before the formation of the W.A.A.C., offered herself for any kind of war work, and after a period of intensive training was admitted as a hospital nurse. She worked at first in a hospital on Salisbury Plain and later at one on the South Coast, and at an internment hospital in Switzerland, ending up with a post in the massage department of one of the big London general hospitals. As a record of the impressions produced upon one who went into hospital work unversed in the experiences which she was going to meet, this little book is of interest. The smile and the tear are, as everyone knows, very near together in hospital work, and Mrs. Bulstrode shows that she managed to appreciate both at their proper values.

[1] Some . . . . Helps: Memories of War Work at Home and Abroad. By Frances J. Bulstrode. Norwich: Jarrold and Sons, Ltd. 1927. Pp. 62. 1s. 6d.

SUN-BATHING IN HYDE PARK.

A MAN of 44, who had apparently been sun-bathing in Hyde Park, was bound over by the magistrate at the Marlborough-street Police-court on August 12th, on a summons for contravening the regulations scheduled in the Parks Regulation Act of 1872. The newspaper report of the case did not specify the precise offence alleged; presumably the prosecution relied upon Regulation 14 in the schedule: "No person shall commit any act in violation of public decency, or use profane, indecent or obscene language to the annoyance of other persons using a park." Though the punctuation is misleading, the regulation probably means that the act violating public decency (as well as the profane, indecent or obscene language) must be to the annoyance of others. In certain parts of the continent the standard of public decency tolerates considerable concessions to the pursuit of health by exposure to the sun's rays. It was contended on behalf of the accused in the case under discussion that exposure of the upper part of the body for the purpose of benefiting health was not a violation of public decency. The magistrate (Mr. Mead) said he thought decent people—not prudish people—would be shocked to see a man ostentatiously sprawling about on the grass as the accused was doing. He also expressed apprehension of what might happen if myriads of people of both sexes in Hyde Park acted in a similar way. The accused, he said, could carry out his ideas of health under proper conditions without restraint.

The law of our parks is a little obscure. The Act of 1872 dealt only with certain specified Royal parks and gardens, mostly in the London district. The regulations scheduled to the Act covered such matters as dangerous driving, drilling, practising gymnastics, public speaking, drunkenness, discharging firearms, lighting bonfires, flower-picking, dog contol, fishing, bathing, and skating. Some of these regulations could be amplified by "rules of the park" made by the Commissioners of Works. Such rules were made for Hyde Park in 1910 and again in 1926. The rules deal with vehicle traffic, processions, public addresses, bathing, and boating. Bird's-nesting is forbidden; so is fishing in the Serpentine; so also is the loitering of unclean or verminous persons in the park or their lying on the ground or occupation of seats. Last year the Parks Regulation (Amendment) Act extended the statute of 1872 to all open spaces under the control of the Office of Works, and removed any restriction of the statute to merely "Royal" parks. The Commissioners of Works will in future be allowed to make regulations for all such places, and the regulations scheduled to the 1872 Act are repealed as from December next. Battersea, Victoria, and Kennington Parks were transferred to the charge of the Metropolitan Board of Works in 1887, and are thus now controlled by the London County Council. The Royal Botanic Gardens at Kew have been under the control of the Board, now the Minister, of Agriculture since 1889. The upshot of the legal developments of park regulation is a diversity of authorities and of laws. It would be safe to say that few persons who use Hyde Park are aware of the offences they may be committing, though indecent exposure is, of course, punishable by the general law of the land as well as by the local park regulations.

HEALTH CONDITIONS IN HONG-KONG.

A DELAYED report on the affairs of Hong-Kong for the year 1925, prepared by the Colonial Secretary, has been issued as a Parliamentary paper. It states at the outset that 1925 was not a happy year for the colony, owing to the great strike and other circumstances, though the manner in which it weathered the storm was a matter of self-congratulation for all sections of the community. The estimated total population at the middle of the year under review was 874,420, but this includes the New Territories, and, as the birth and death figures given below do not include those from this area (with the exception of New Koolon), the population for the purpose of calculating these rates was estimated at 786,920, of whom 16,500 were non-Chinese. The birth-rate for the year was 4·25 per 1000 among the Chinese community, and 22·6 per 1000 among the non-Chinese community, as compared with 5·47 and 18·25 for 1924. The figures for the Chinese community are obviously misleading owing to defective registration. The death-rate for the year was 19·12 per 1000 among the Chinese community, and 14·6 among the non-Chinese civil community, as compared with 21·9 and 15·68 for 1924. The following is a complete return of the deaths registered in the colony during the year: hydrophobia, 3; influenza, 45; small-pox, 41; measles, 3; typhoid fever, 91; diphtheria, 38; cerebro-spinal fever, 57; dysentery, 331; plague, nil (the last deaths from plague occurred in 1923); malarial fever, 702; cholera, 2; puerperal fever, 3; septic infections, 56; syphilis, 376; poisoning 74; injuries, 366; developmental diseases, 293; old age, 577; general tuberculosis, 253; beri-beri, 1744; cancer, 116; paralysis and convulsions, 110; heart disease, 202; pneumonia, 2878; phthisis and pulmonary tuberculosis, 1831; enteritis and gastro-enteritis, 1080; cirrhosis of liver, 35; peritonitis, 28; nephritis, 433; other causes, 2931; unknown, 292.

Civilian Hospitals.

The Civil Hospital contains 198 beds in 23 wards. 5774 in-patients and 30,889 out-patients were treated during 1925, as against 6406 and 31,347 respectively in 1924. The maternity hospital contains nine beds for Europeans, plus three extra beds, and eight for Asiatics; 668 confinements occurred during the year, as against 789 in 1924. The Victoria Hospital at the Peak contains 41 beds, and during 1925 320 patients were under treatment there. At Kennedy Town Hospital, which contains 26 beds, 12 cases were treated in 1925, being infectious. The Kimatu Asylum is under the direction of the superintendent of the Civil Hospital. European and Chinese patients are separated, the European portion containing 14 beds in separate wards, and the Chinese portion 16 beds. 308 patients of all races were treated during 1925, and there were nine deaths.

The Tung Wa Hospital, opened in 1872, is mainly supported by the voluntary subscriptions of Chinese; only Chinese are treated in this institution, which performs various other services not appertaining to a hospital, such as the free burial of the poor, the repatriation of destitutes, the maintenance of free vernacular schools, and the organisation of charitable relief in emergencies; Chinese as well as European methods of treatment are employed in accordance with the wishes expressed by the patients or their friends; over half the number are now treated by Western methods. There are 450 beds in the building, and 9133 patients were accommodated during 1925. The institution is under the supervision of a visiting physician, who is a member of the medical department, whilst two Chinese house surgeons, trained in Western medicine, are members of the hospital staff. The Tung Wa also maintain a branch hospital for small-pox cases (Chinese only) at Kennedy Town. It contains 70 beds, and during 1925 23 cases were treated.

The Alice Memorial and Affiliated Hospitals dealt with 1402 in-patients in 1925 and 81,715 out-patients. The Kwong Wa Hospital for Chinese in the Kowloon Peninsula was opened in 1911. It occupies a site having an area of three acres, and the existing buildings contain 215 beds; 6862 patients were accommodated during 1925.

Dispensaries.

Amongst other institutions in the colony supported by voluntary contributions is the Pó Leung Kuk, a Chinese society for the suppression of kidnapping and traffic in human beings, and the Eyre Diocesan Refuge, founded for rescue work among the Chinese. The Chinese public dispensaries are institutions maintained in order to provide the Chinese with the services of doctors whose certificates will be accepted by the registrar of deaths, and with the services of interpreters who can assist the inmates of houses where a case of infectious disease has occurred. Coolies are engaged, and ambulances and dead vans provided in order to remove cases of infectious disease to the infectious diseases hospital, and dead bodies to the mortuary. The dispensaries receive sick infants, and send them to one or other of the convents, and arrange for the burial of dead infants. Free advice and medicine are given, and patients are attended at their houses.

THE BALANCE-SHEET OF SUNSHINE CLINICS.

EXPERIMENTAL light centres were established at the Ashton-under-Lyne and Lancaster County dispensaries in 1925 for the treatment of certain forms of non-pulmonary tuberculosis. A report by Dr. G. Lissant Cox to the County Council states that the treatment has given good results in two groups of cases refractory to other forms of treatment—namely (1) lupus, and (2) adenitis with abscess formation and skin involvement. Many of the lupus cases had been under treatment for 20–40 years prior to commencing light treatment. The efficiency of light treatment was not so strikingly proved in other types of surgical tuberculosis which respond fairly satisfactorily to other forms of treatment.

No permanent ill-effect, either local or general, had been caused by artificial light treatment and no patient treated by light had relapsed. Dr. Cox informed the health committee that the total number of cases of non-pulmonary tuberculosis in the county of Lancaster on Dec. 31st, 1926, was 3708, of whom 1219 were likely to benefit by light treatment. After a careful review the committee came to the conclusion that the provision of light apparatus should be considered for 15 of the existing county dispensaries, so as to make it possible to treat patients reasonably near to their homes. Cost and saving might be set out thus: Estimated cost (including depreciation at one-fifth of capital cost of £1950) of running 15 centres for one year, £5780. Estimated saving (based on experience at Ashton) in cost of residential and other special treatment by attendance of patients at centres, £6000.